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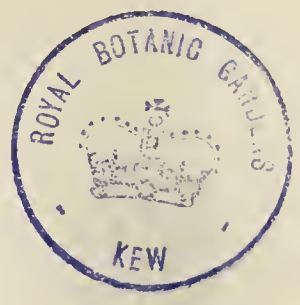
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TO OUR READERS.

WE do not know that it is necessary to say much more on the completion of another volume than to assure all who have shared in its production that their co-operation is warmly appreciated.

It is by the ablest and best of gardeners and the most accomplished amateurs imparting the experience that has made them successful that the "*Journal of Horticulture*" is what it is to-day, and it is by a continuance of their support that its interest and usefulness will be maintained.

We rejoice to know that the ripe experience of a host of cultivators is at our disposal, and we are encouraged to observe that as the old retire from time to time to enjoy well-earned repose, others are qualifying themselves to continue the work.

Thus it is that while the past has been satisfactory, the future will not be less so; but, on the contrary, the progress that is made in horticulture in the introduction of new products and improved methods of culture will be faithfully reflected in our pages.

As heretofore, advice that may be sought for in cases of difficulty will be given freely, for we conceive nothing can be more pleasurable than to help where help is needed in the accomplishment of objects so worthy as perfecting the culture of the flowers and fruits of the earth.

We repeat, then, our obligations to all writers and readers for their continued support in this important work, and in completing a volume that both in variety, interest, and usefulness will, we think, compare not unfavourably with its long line of predecessors.

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COMING EVENTS

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2	F	
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4	SUN	2ND SUNDAY AFTER CHRISTMAS.
5	M	
6	TU	OLD CHRISTMAS DAY.
7	W	

A FEW STIRRING WORDS TO GARDENERS
YOUNG AND OLD.

WHAT! attempt to write another New Year's address in the *Journal of Horticulture* after writing, let me see, twenty—yes, actually twenty!" So I said to myself on Christmas Eve. The old pen is surely quite worn out, the nib utterly done for, the hand that holds it—well, not quite utterly done for, I hope. Still, the knuckles show plainer than they used to do; the skin is thinner and the veins larger. What!—to change the simile—actually trot out the old horse once again?—a little stiff in the joints, the old fire not so bright in the eye; but he'll warm to the work and with the work, I fancy. He loves the work. And now to drop figure altogether. I do love the old Journal, though I flirt with young "POULTRY." Still, she was part of the old Journal, but now grown up, and set up for herself. How can I do otherwise than love the old Journal, for she has always loved me through the voice of her kindly and sympathetic readers?

Here is a letter lying before me, come by this very Christmas Eve's post, and in it I read these words: "I am looking out for another stirring letter for the New Year from our old friend;" and then there is a further comment: "Thus writes a correspondent; and you, 'Wiltshire Rector,' are undoubtedly the old friend referred to."

Well, then, we meet once again, my friends. Spared hitherto, all of us; hit hard, no doubt, many of us by old Father Time, but he has not yet cut us down with his scythe; so let us be thankful. "A few stirring words" shall be attempted. A bugle's note stirs the blood; it stirs it in various ways. It stirs on to the attack, but it also warns, and on a review day it cheers all. My bugle shall do all three.

Gardeners, we have all enjoyed a glorious summer and a gorgeous autumn. Work is doubly pleasant if the weather be pleasant. I have used the word pleasant as connected with work, and am I not right? Work, with health to do it, is really pleasant, whether it be hand or head work, spade labour or brain labour; whether it be training a tree and seeing its symmetry improve under your hand, or watching nouns and verbs drop from your pen, and sentence after sentence become rounded off.

Work, I say, is pleasant. Oh, young men, never scamp it. I was shown some beautifully carved doors and door frames in a building which had seen its century. I admired them; the graceful lines, the flower groups, the choice productions of the wood-carver. My guide said, "Come here, sir; here is the back of a door which no one visitor could possibly see, and yet it is carved just as well." He touched me lightly on the arm and added, "Men loved their work then, so they did not scamp it." Young lads and young men, here is a lesson: Don't scamp your work, but delight in it. Remember the carving on the back of the door which no visitor could possibly see was yet as well and as painstakingly

done as the front of the doors open and visible for all to see. The upper gardener will respect the young lad or man who does his work thoroughly and keeps all as clean inside the houses and places, whether easy to be seen or only to be seen on close examination. I would, therefore, stir you up to doing work thoroughly, both what is seen and what is not so readily seen. Give me the man who never scamps his work, and who takes delight in it. I would say, too, good work always pays the worker. The reward comes sooner or later, and if it does not come by way of reward there still is conscience, and conscience may and does comfort as well as prick. Some Scotch gardeners, no doubt, will read this. They will remember their own poet's words, the words of poor Robbie Burns:—

"Yes; to be just, and kind, and wise,
There solid self-enjoyment lies;
But foolish, selfish, faithless ways
Lead to the wretched, vile and base."

Better it is to take your watch out of your pocket and be surprised how fast time has gone while you have been working loyally and faithfully, than to be always looking at it, and wondering why it does not go faster, and saying, "When will the day be over?" Work well done always pays. "You have been a good gardener. I have noticed all you have done has been well done," said a deceased nobleman to his head gardener; "I now make you my steward," and he was for years as good a steward as he had been gardener; and I knew him well. But the good worker is honoured in his grave often long after he has passed from this life. I will give an example. Inside every old double-cased watch there is a kind of guard to a portion of the works, a circular little thing, less than a shilling in size, but exquisitely designed and worked, not two alike. I have often admired them. Dozens were lying by in all watchmakers' drawers. A lady of taste noted them, saw their beauty, had a number made into a necklace, others made into wrist studs and brooches. This set the fashion, and now the carefully worked, and beautifully designed "watch locks" of the old workmen, honoured and gilded, glitter on the necks and wrists of many a fair English dame and damsel. Yes, good work is honoured in the long run. I sound this stirring bugle note: "Work your best."

But the bugle note warns as well. One who knows thoroughly what he writes, says:—"There are no doubt 500 gardeners in and around London alone seeking situations and cannot find them. A worthy man from the north brought up to London his six children, and they are now starving in a garret. He is but a type of others. Country gardeners should avoid Babylon as they would a plague-stricken city, unless they have previous arrangements with some quite sure to give them employment when they come to London."

Now, then, for a few stirring words of warning. Country gardeners, act with extreme caution and prudence, and only relinquish your situations when you have another to go to, and then remember there is the removal, and "three removes are as bad as a fire," saith the old proverb. If everything is not exactly what you wish—well, would everything be exactly what you wish in any place? Circumstances have changed for the worse with a great many employers, and they cannot give the wages they did formerly. Agricultural depression weighs on all shoulders—squire's and clergyman's, retired people of formerly ample means, now of lessened means; on tradesmen, on all. We must bear the load patiently. Remember—and especially married gardeners, remember—and act wisely. A mistake made in a moment, a hasty word said, and the effects may be felt for years. If spoken to it may be warmly—well, "hard words break no bones," saith another good old proverb. Bite your tongue through rather than make a hot angry answer, and so lose your place. Think of the poor wife at home, and how sad she would look in lodgings instead of her now pleasant tidy cottage; think of

the children removed from school; think—oh, the horror!—of them all starving through your rash words. Then, many men are now impoverished by having acted hastily who were once in well-to-do positions, and would now thankfully return to them—if they could. You cannot get work in London. The nurseries are full to overflowing, and hundreds knocking at their doors hopelessly. I have known men leave because the cook was, they thought, over-exacting about the vegetables and was sharp-tongued—as cooks often are, and will be to the end of time. Be good-natured with the cook; nothing like a good-tempered reply will soothe an angry woman. Of all things use no bad words, which are bad in themselves and bad for you, but will be magnified by the cook to the master. I have heard of a man who used to swear, but when he became a good man he relieved his feelings in irritable moments by saying, “Pepper, salt, mustard” over and over again, and he said they did just as well. Remember this, my bugle note of warning.

Another stirring word. Something was written about Sunday work in gardens, then a word about being always or often too late to do what was necessary in a garden on Sunday; that they loved their bed, and were not about until eight o'clock. I can explain this. It is the Saturday night late shopping which causes men to be late on Sunday morning. If masters would but pay their men on Fridays, then their wives could shop on Saturday morning, and so the men would not be late doing the necessary Sunday work, and Sunday worship would, of course, be less interfered with.

I have often spoken of the delights of gardening; of the purifying, elevating nature of horticulture, and never were gardens so numerous and so enjoyed. During the summer months of this year I was from illness a resident in one of our most health-giving and beautiful inland watering places. My house at the back looked upon the garden of a large and successful tradesman, whose devotion to Roses is well known. Every morning as I dressed I saw him enter his garden; how he examined each Rose; how he enjoyed his saunter among his flowers, and talk with his gardener; how prepared he was by that visit for the supervision of his large business; how calm, how pleasant to him was that morning hour! But there are the great of this world, men who wield the destinies of nations, they often love flowers. The Primrose was, we all know, the favourite of Lord Beaconsfield, the man of the most marvellous career of modern statesmen, for he had neither birth nor fortune to help him. There is another, the greatest of living statesmen, Prince Bismarck. The Heather blossom is his favourite flower. It was no mere chance that these two great men have felt an especial fondness for these flowers that grow wild about their homes; but we may see a proof that amid their toils they had the quiet mind amid the disturbance of politics. Yes, gentle and simple love the sweet flowers; many cultivate them assiduously. We all need their influence, and all at times feel that influence. May those whose calling it is to provide flowers for our enjoyment have a prosperous year. I have given words of advice which, I hope, are suitable, and will be taken well; and I remain, good readers and writers, your old friend,—WILTSHIRE RECTOR.

COOL HOUSE ODONTOGLOSSUMS.

THE object we have in view is to recommend those cool house Odontoglossums which are useful for growing in quantity to supply choice winter flowers in establishments where cut flowers are in great demand during the winter. Thousands of Odontoglossums of the *O. crispum* type are sold annually at quite as cheap a rate as many ordinary soft-wooded plants; at least hundreds of good plants are sold from £5 to £10 per hundred in some of the large Orchid-growing nurseries. By good plants I mean established imported pieces, which, with proper attention, grow freely, and soon reach a flowering size. If Odontoglossum flowers are required in quantity, it is of no use to grow a few plants, several hundreds should be had, and considering the price at the present time, the cost should be the last consideration if choice flowers are desired. Excuses are

often made when the plants are looking unhealthy, that it is the fault of the house. Large lofty houses, we admit, are unsuitable, but any kind of small house should grow them well if the cultural details are managed properly. Cool Orchids require a house devoted to them if possible, and in many gardens in the south they are grown in houses facing the north, but I have seen them equally as successful in houses running north and south. Means of ventilation must always be provided, but carefully avoiding draughts.

During the early spring months good established imported plants could be obtained, at which time probably they would require repotting, but we prefer keeping them for about a fortnight before doing so. Early in February is a good time for repotting established plants, at which time those that have finished blooming commence making fresh growth. Those that are showing young flower spikes should not be repotted until they have flowered, and probably they would remain until the autumn, but of course judgment must be used. Young growing plants which were repotted in early spring, or imported at that time, often require repotting in early autumn, at which time healthy *Odontoglossums* of the *O. crispum* type grow and improve wonderfully, soon commencing to form new roots in the fresh compost.

The best potting material is equal parts of cleanly washed sphagnum and very fibrous peat, with all the fine particles sifted out, a good sprinkling of clean potsherds and charcoal. The pots may contain two-thirds their depth of clean potsherds, the compost being placed firmly about the roots of the plants, the crowns being elevated above the rim of the pot. Some plants when being repotted require most of the old compost shaken from the roots; others, when the compost is sweet and healthy and filled with roots, need not be disturbed more than is necessary. After the plants are repotted they should receive a thorough supply of tepid soft water, (and such should always be employed), applying through a fine-rose syringe held close to the compost. The house may be kept rather close and shaded from sun until the plants commence making fresh roots, when sufficient ventilation should be given to keep the house cool without a draught, and the atmosphere must not be allowed to become arid. The outside temperature must be the guide to ventilating. *Odontoglossums* can have too much water, and the best guide we have found is to keep the compost after repotting fairly moist, when the sphagnum will commence growing, and when established, only apply water when the tips of the sphagnum appear to have a white tinge. This will keep the sphagnum in a healthy growing condition, which will be a sure sign that the potting material is also right as regards moisture.

Syringing the plants should not be practised, it is only beneficial after a warm summer's day, and then only lightly. Syringe between the pots twice or three times a day during the spring and summer, but on wet days it will not be required more than once. During late autumn and the winter months damping should be sparingly performed, and especially in cold weather. The plants must be shaded from bright sun through the spring and summer, but do not allow the blinds to remain down any longer than is necessary. Fire heat should be applied to prevent the temperature falling below 45° to 48°, and only then, except on cold damp days, when a little warmth in the pipes is very beneficial.—A. YOUNG.

UNDER GARDENERS.

UNDER gardeners and subjects relating to them have been thoroughly discussed from time to time. I have hitherto avoided entering into these discussions, because they have frequently been directed to prove the degeneracy of the present young gardeners in comparison with those that existed in the “good old times” that are past, but I have a few thoughts on the matter that may be suggestive to others.

I am under the impression that many gardeners shirk much of their responsibility, for it is the “chief's” duty to school or train those under him for higher positions when the time arrives. If we ignore this fact, and young gardeners are degenerating, upon whom does the discredit fall? Young men are in a very large measure what they are trained to be, either quick useful capable men, or slow inattentive and worthless. The former, I am proud to think, largely predominate, while the latter exist, not only amongst the gardening fraternity, but in every branch of industry. I readily admit it is impossible to educate some men, but these are the few and not the majority. A gardener of the old school—undoubtedly a good man in his day—said to me some years ago, “I am paid for thinking, and you for doing,” which appeared then, as it does now, very well upon the surface, but the remark bears no further investigation, for

this is just the point that should not be lost sight of by gardeners, if those under them are to be useful, capable, and intelligent. I have invariably found that if men can be induced to think as well as act according to orders, they quickly recognise their share of responsibility, and not only do their work better, but learn to take a pride in it. But the man who wants someone to think constantly for him, grows more careless and inattentive, until he becomes so slothful that he remembers but little, and cares less whether he does that which he is told or not.

The fact cannot be overlooked that young men are trained in inattentive and careless habits, if not directly, they are indirectly, as many besides myself could prove from experience. This is a sad mistake, especially when it occurs in early life, when young men through inexperience are incapable of discriminating what is really right and wrong in relation to their work. They are often allowed to get into this "come-day," "go-day" system, and if not timely roused, it takes so firm a hold that it soon becomes part of their nature. When a change is made to another garden where such habits are not tolerated they have to commence unlearning, which is more difficult than learning the right method in the first instance. How many young men have been discharged from situations through being slow, careless, and inattentive, or have been reminded that they must alter quickly if they are to retain them. I could point to several who have been in this unfortunate position, and who have been taught to think, for the first time in all probability, in relation to their work, and how to accomplish it in the best possible way without wasting time.

It is unfortunate that about 25 per cent. of young men are badly trained—judging from my own experience—and although capable of doing their work after a fashion, it is in the majority of instances in such a manner that is likely to lead to disastrous instead of successful results. It is evident that habits of carelessness, inattention, and indifference are allowed to exist to a large extent somewhere, or such young men would be better schooled in the transaction of their duty. In at least twenty cases out of twenty-five it is not actually the fault of the men, but the responsibility falls upon those who should have known and learned them better. I have had men who were almost useless for the position they had to fill, and nearly parted with them, but finding that they were thoroughly honest in every respect, and only wanted "rousing" and "drilling" to make creditable men, I have resolved to give them a further trial, provided they agreed to exercise a little thought—in short, to unlearn and learn afresh. These terms have been agreed to, and I am proud to say the majority have turned out as well as I or any gardener could wish that requires abundance of work well done and in the least possible time. The result of discharging these young men would probably have been an end to their gardening career and good men driven out of the profession, not for any fault of theirs, but through negligent training. I need scarcely urge upon gardeners and others the importance of bearing patiently for a time with men of this stamp, instead of deciding hastily to send them adrift.

The time will soon be at hand again when those young men thinking of changing will do so, and this is one reason for penning the above. The most important of all is, however, to consider whether the system of changing in vogue at present amongst young men is the wisest and best by which they can become acquainted with the many and varied branches of gardening. It is undoubtedly the only system in existence by which a general knowledge can be gained; it nevertheless has objections, and not the least is the fact that changes are made without exercising the slightest thought in the matter. In many cases a change is made simply because the term indicated has been served. This is the greatest fault, and has, I fear, become a general practice. It must not be forgotten by my young friends that changing from garden to garden is like putting your hand in a lottery where there are more blanks than prizes. In the past I have changed, and regretted doing so afterwards, for another year in the old school would have been much more to my advantage than two in the new one. The very opposite in other instances has been the case. Before deciding to change according to custom, my advice is, Think the subject over carefully, and if a decision is arrived at that all has been learned that it is possible to learn under the circumstances, then a change will be beneficial for future interests. Where men are kept in one house or in one department, with no prospect of going into others, the length of time named is quite long enough before changing; but where there are several departments, and the men are not confined to the work in the one over which they may have charge, they have a better chance of gaining a general knowledge, and the term usually served is too short. I am no advocate for confining men in one department, but prefer their

taking part wherever work is required to be done, in addition to shifting them from one department to another periodically, so that they are kept conversant with the work of the establishment generally.

My advice is, Think before acting, and do not hastily decide to change because some of the work in which you may be engaged is disagreeable, for it may prove more so in the next place. There is always something to complain about wherever we may go, and I trust that young men will not be led away by thinking that if they surmount one difficulty by changing, that others will not present themselves, and perhaps of a more formidable character.

It is undoubtedly advantageous that things, places, and persons are not exactly as we would desire them, and that we cannot always have what we wish. Many an obstacle and difficulty has been surmounted by bringing into force the thinking powers with which we are endowed, and brilliant successes have resulted in many instances. What can be accomplished by one, may by others be attained by intelligent thought and perseverance.—W. BARDNEY.

AURICULAS.

THESE are now in their winter condition; nearly all the old leaves are fading, but the buds are plump, well ripened, and the roots are in the best condition. Several of my plants produced trusses in early autumn, but happily there was plenty of time after they showed for the plants to make excellent buds, which, thanks mainly to the splendid autumn we enjoyed, they have done, and from some of them I expect fairly good trusses next spring. I believe the chief reason why my plants flowered in autumn was the very hot weather we had. I do not think the time of potting has much to do with it. The green-edged varieties were worst in this direction, and I should be glad if other growers would say if they have observed these to produce most autumnal trusses? It rarely occurs in selfs and Alpines. I have seen other good collections this autumn, and I am of opinion that the shows of 1885 will quite reach, if not surpass, the excellent standard of 1884. There will not be a large influx of maiden growers, but the young hands are becoming adepts, and their collections are increasing, so it is more than probable the stages will be fuller than usual and the majority of the classes more keenly contested, while we may be quite sure the old exhibitors will do their utmost to hold their own.

A word as to the present treatment of Auriculas may be useful, for while little is necessary to be done that little must not be overlooked. Never allow the decaying leaves to remain on the plants after they are useless, yet do not remove them before they reach the latter condition. If allowed to become thoroughly decayed they are liable to cause decay in the others or the stem itself. I recently saw some fine plants of Colonel Taylor lost through neglect of this simple action. Keep the plants on the dry side, by which means they will be kept at rest. I examine my plants at least twice a week, and give a little water to those that are dry, as it is injurious to bake them so as to shrivel leaves and roots, such conditions being quite opposed to their natural requirements. Have a keen eye for drips, especially if the plants are wintered in a frame. Take advantage of a showery day to examine the lights, and if any plants are in danger remove them to safe quarters, for if moisture is allowed to fall upon the bud decay may set in and destroy the plant quickly. Ventilate freely upon all suitable occasions. It is likely Auricula growers have never had so much occasion to ventilate since the end of October as this season, owing to the very mild weather. At present (December 23rd) there is an indication of sharp weather, which will be wholesome, and greatly assist in keeping the plants back. Some varieties are naturally earlier than others and great care must be exercised to retard their flowering. Miss Lightbody (Lightbody), Glory, Acme, and several others are inclined to come in early; such should be keenly watched and checked in time. This will be best accomplished by removing them to a shady cold frame. Others, again, are inclined to lag and frequently require assistance, such as Richard Headly, Headly's New Green, and frequently Prince of Greens. These and some other varieties will need the sunniest position possible for them.

It is a great pity that so many of the fine varieties raised by Mr. Horner and others do not find their way into more general cultivation. Is there an understanding within certain limits that they shall not be distributed? I make these remarks because in some collections where I have seen them there has been no attempt to increase them beyond the ordinary method of removing side shoots, which most of them are slow to produce. It is regrettable if their distribution is to be limited.

As to the value of top-dressing I am very sceptical, and I am inclined to look upon it as being really prejudicial in the end; consequently I did not adopt the practice with one of my plants last season,

and have no intention of doing so in future. Provided good soil is used for potting, it is, I think, absolutely unnecessary. It seems like undue stimulation, which having spent itself leaves the plant in worse condition than it was before the application. Certain is it that the flowering is not much affected either way, and we rely for the following season's bud as the result of healthy growth after potting. Recently I have noticed Mr. Douglas and others inclining to this view, and it is to be regretted that the former successful grower should have advocated it in his excellent work of "Hardy Florists' Flowers." The plan I adopt when the plants resume activity in February is to clean the surface of the soil, slightly loosen it, and if necessary replenish with a little ordinary soil, using nothing of a stimulating character.—T.

MUSCAT HAMBURGH GRAPE.

HAVING a very high estimation of the above Grape I beg to make a few remarks as to the best road to success. It is unquestionably the best-flavoured black Grape we have, and well deserves to be more extensively grown. When looking through any vineries I generally ask the question, "Do you grow Muscat Hamburgh?" The answer invariably is, "No, it's such a bad doer." I am of precisely the same opinion when it is grown in the usual way—namely, planted on its own roots. The Muscat Hamburgh on its own roots, in the first place, is not a strong grower; secondly, it is a very shy setter; and lastly, it is one of the worst of all black Grapes to finish. From the above we find three things are required—very important matters—that is, strength, fertility, and colour, all of which we have in the Black Hamburgh.

Your correspondent "F. A. B." is right when he speaks of grafting Muscat Hamburgh on the Black Hamburgh, but I cannot admit that there is much advantage in allowing the stock to produce leaves and fruit for a few feet at its base. In my opinion at least one rod of the stock should be taken up, and so let the scion and stock bear fruit side by side. When living with Mr. Bloxham at Brickhill Manor some few years ago Muscat Hamburgh was there grown by him in the finest condition that it has been my pleasure to witness, and it was done in exactly the same manner as above described. All being well, I intend carrying out the same principle here. Some new vineries having been lately erected, and my employer preferring Muscat-flavoured Grapes, induces me to prepare for that purpose. The borders are inside and out with concrete bottoms and well drained—a most important matter.

I think under the best conditions it requires more than ordinary skill to produce fine examples of this most excellent Grape; but when bunches are brought out like Mr. Bloxham used to do them, and probably does now, it fully repays all the labour bestowed.

I have been told by experienced growers that Venn's Black Muscat and Muscat Hamburgh are the same. This I am prepared to contradict, having seen both varieties grown in several gardens. The best Venn's Black Muscat I have seen was at Bodorgan, grown by Mr. Ellam the then gardener. Since that time I have felt quite satisfied about their being distinct varieties.—ARTHUR COCK, *Holborough Court*.

ORCHIDS.

[A paper read by Mr. D. Birt before the Caterham Horticultural Society, December 12th.]

(Continued from page 567.)

IT is not solely the beauty of the flower which gives an Orchid a high market value, the mere rarity of the plant sometimes does so. For instance, there is a common *Cypripedium* known as *C. Stonei*. The flower is interesting, but not specially so, and a good plant may be bought for a trifle, but on the occasion of an important private collection of Orchids coming to the hammer there was offered a plant not then in flower called *C. Stonei platytanum*. I was told the flower of it was very similar to the common type, but had slightly different markings. It was announced by the auctioneer and was, I understood, an accepted fact amongst orchidists that only two other plants of this type were known to exist. This fact led to a very keen competition, in which of course only the Orchid giants took part. In the end the plant which, I think, occupied a 6-inch pot was sold at £140 odd. So that the possessor of this plant pays, say £7 per annum (that being the interest on his outlay), for the privilege of looking at the one or two annual blooms which it produces.

Let us suppose that at one of the sales of imported plants we buy a piece of dry *Cattleya*. We will hope for our chances of success that it is in spring time with the summer before us for growth. What shall we do with it when we get it home? We will first wash it free from dirt of every kind, clearing out all interstices in which foreign insects may have lodged. We will

then select for it a shady and rather moist place in a temperature below that which it will need when growing. Whether we hang it by the heels or lay it on the stage or pot it ready for growing makes little difference. Its condition is very much that of a man recovering from a long starvation. We must administer to its wants sparingly—not much light, not much moisture, not much heat at present. If we give it these too liberally the result will be the same as if we give the half-starved man a good dinner of roast beef and plum pudding. He will find it too much for him and succumb to the kind intentions of his would-be restorer. No, we must only very gently stimulate our recovering plant, and in a few weeks it will make signs of growth. It will begin to swell at the bottom of the leading pseudo-bulb, and possibly show signs of rooting. Then we must at once pot it if we have not yet done so, for its tender roots will need something to cling to. So we fill an ordinary red flower pot with broken crocks to within 1½ inch of the rim, upon this we place a little fibrous peat with a few lumps of broken charcoal amongst it. Upon this we place our patient, supporting him with friendly sticks and tyings of bast till such time as he shall recover his strength, and having thrust down some of his roots amongst the peat and crocks can stand alone.

I alluded just now to the popular notion that Orchids require great heat for their culture. This is, I suppose, a survival of the former authoritative opinion that high temperature was essential. The earlier cultivators of Orchids killed them right and left under this treatment. It has been found that moderate temperature and in the case of many varieties low temperature, is necessary for success. The great cultivators of Orchids like Sir Trevor Lawrence and Mr. Lee of Leatherhead, and the large nurserymen, have many separate houses in which the exact wants as to temperature, air-moisture, shading, &c., of the various classes are supplied to the utmost nicety. Humbler growers cannot of course pretend to this elaboration of treatment. Still the man who has one ordinary greenhouse may grow with success many delightful varieties; but if his glass house can be divided into two compartments, or better still, into three so as to create as many different climates for his plants, a very large proportion of the most interesting sorts may be cultivated with success. A cool compartment is wanted for the *Odontoglossums*, and with them may be grown *Oncidiums*, *Masdevallias*, and other kinds. These plants will not do much to swell the coke bill, for during seven or eight months in the year they want no fire heat, and indeed dislike it, and during the winter they only modestly ask that you will not let the frost in to them. If you care to be generous and do not let the thermometer go below 45° they will respond to your kindness. In spring, summer, and early autumn they enjoy all the air-moisture you can give them, and plenty of water overhead on fine days. Add to this full ventilation top and bottom, and shading from the hot sun, and they will give you an annual crop of beautiful flowers at less trouble to the cultivator than many of the common greenhouse plants that require, besides many of the attentions I have referred to, frequent repottings and tying and training that cool Orchids do not need.

Then you want another compartment of your house in which to grow *Cattleyas*, *Lælias*, *Vandas*, &c. In this also the fire heat at night (for by day you do not want it at all except on cold and dull days in winter) must be kept at a minimum consistent with some approximation to the climate natural to the plants. And here let me say a word about artificial heat. There is no doubt that fire heat, modify it as you will by moisture, is inimical to plant life. Sun heat is quite different in its nature. Its life and force-giving properties seem absent altogether from fire heat, which seems rather to have in it elements of death. It appears to me one chief problem for cultivators under glass to find that lowest fire temperature for the different kinds of plants which will save them from injury by cold. Any excess of heat over this is not merely wasted but does positive injury. In other words artificial heat should be regarded not as a good thing in itself to be supplied with liberality, but rather as the less of two evils, though one which by excess quickly becomes the greater of the two. The occupants of the *Cattleya* or intermediate house (as it is sometimes called) like plenty of ventilation, and on fine bright days considerable air-moisture, though less than the *Odontoglossums*. At night or during the day all the year through it is well to leave the bottom ventilator open except in frosty weather or when it is very windy, when the warmth is apt to be blown out of the houses.

The third compartment or house, called by orchidists the East India house, is practically an ordinary stove. In it the *Dendrobiums*, the *Saccolabiums*, and the warmer-growing *Cypripediums* will grow with other plants which delight during the growing season in a more close, warm, and humid atmosphere.

To sum up in a few words the treatment required by the several sections. Cool house.—Much air-moisture at all times except in the dark damp days of winter, copious watering in summer weather, plenty of ventilation at all times. Shade heavily from summer sun so as to keep down the heat; use no fire heat at any time except to keep the temperature from falling below 45°. Intermediate house.—Moderate air-moisture, more in summer than in winter. But little water to plants when resting, only enough to prevent overshivelling of the bulbs; all the air possible on warm days. Sufficient shading when the sun is strong to prevent burning of the leaves. Use fire heat sparingly, and none at all during the three hottest months. East India House.—Rather more heat, say 5°, than in the intermediate house. Plenty of moisture, and overhead syringing during the summer and early autumn. Less ventilation than in the other houses.

[In the twelfth line from the bottom of page 566, last vol., the sentence, "As in the case of the *Cattleya* each leaf has its own reservoir," should read, "Unlike the *Cattleya* each leaf has not its own reservoir."]

(To be continued.)

A GOOD PEACH AND A POOR NECTARINE.

HALE'S EARLY PEACH.—This I consider a good variety. The tree is a free grower; the fruits form readily, swell up to a handsome size, colour attractively, and are first-rate in flavour. It is the earliest Peach I know. In a house here we have four Peach trees and two Nectarines. Hale's Early is one of the Peaches, Prince of Wales, Royal George, and Barrington are the other three. The house is unheated, and they come on almost naturally; but for two years Hale's Early has supplied us with ripe fruit by the end of June, while none of the others were ready until the end of July, and we could not gather the Barrington until the second week in August, and they are not over until the middle of September, and I find it very convenient to be able to gather Peaches from four trees for about twelve weeks in succession, but we would not begin so early by four weeks were it not for Hale's Early, which I regard as a first-rate variety, and it should be planted wherever very early and a long succession of Peaches are desired.

LORD NAPIER NECTARINE.—This has always been poor with us, and I consider it a poor Nectarine. In tree lists it is said to be large, and some have written well of it on this account; but its size is the only good point it possesses, and this cannot be regarded as much in its favour. It produces very large flowers, which do not form fruit freely, and the fruits are apt to split when about half ripe. When fully ripe they have a good appearance and are rich-looking, but the flavour is worse than fourth-rate, and it is when this is tried that the fruit is invariably condemned. Happily we have only one tree, and I would advise those who think of planting it not to exceed this number until they prove it, as it may be, as in our case, disappointing.—J. MUIR, *Margam*.

HORSERADISH CULTURE.

THERE is no culinary root more easily grown than Horseradish. It only requires to be put under the soil, and it will increase to such an extent that it will be a difficult matter to get clear of it after a time. No doubt this, as well as only being in demand occasionally during the week, which has caused it to be a neglected plant. Cultivated and uncultivated Horseradish are, however, widely different. In the former case the roots are from 15 inches to 20 inches in length and 6 inches or more in circumference, while the latter are often barely thicker than a penholder. The former is juicy and most acceptable in the kitchen, while the latter is dry and unsatisfactory. The thick roots may be grown in rows and be restricted to them, but the small roots run everywhere, and although it does not cost much for cultivation it is far from profitable, and certainly not satisfactory. We have read some very elaborate suggestions as to how to produce wonderful Horseradish of astonishing length and marvellous thickness, but we could never understand the advantage of this, as roots about 6 inches thick are good enough and most acceptable for all purposes, and these may be produced by what may be termed ordinary cultivation.

Roots which have been in the same place for a number of years degenerate and become of poor quality, and when this happens every particle should be dug up and a fresh plantation formed. A quantity of good roots may be stored away for use until the new ones grow. Any part of the root will grow whether it has a crown or bud on the top or not, but we like to plant those pieces with crowns. They should be clean roots upwards of 1 foot in length and without any side growths. A few dozen or scores of these will make a good quarter, and the position to grow them in must be where the soil is 2 feet deep at least. It should be trenched to this depth or more, adding a quantity of manure as the work proceeds if the soil is poor, and if it is of a clayey nature a quantity of finely sifted ashes should be added. These may be applied freely, as the roots penetrate them without forking, and ultimately turn out clean. As soon as the soil is ready planting may be done. The plants must be put in rows 2 feet apart and 12 inches from plant to plant. A dibble should be employed in planting, and a hole deep enough to allow the root to be put straight down without bending it must be made. In filling this round the roots river sand may be used in preference to the soil. When

the side growths are emitted the whole of them should not be allowed to grow, as this would produce the mass of young and small roots so objectionable in its culture, but only a few of the side shoots must be allowed to remain. The superfluous ones may be cut off in hoeing, and when any are dug up for use alternate plants should be taken that the others may have more space to develop. We have cut the thick centre growths out and allowed the small surrounding ones to remain and improve, but this was only when the soil was good, and apart from this they are better lifted every three years and replanted.—M. M.

[In mentioning that "roots about 6 inches thick are good enough," we may suppose that our correspondent intends to indicate the circumference and not the diameter, as Horseradish roots 6 inches in diameter would be almost too good.]

CANTUA BUXIFOLIA.

A MOST beautiful greenhouse bush, very much branched, the branches downy. The leaves are variable in form, generally oblong-ovate, and either entire or sinuate-serrate, and are downy or glabrous. The very large drooping flowers form a leafy terminal corymb; the thick tube of the corolla is 3 inches long, the limb spreading, 1½ inch across, deep rose almost crimson, the tube reddish-yellow. It is an easily grown greenhouse plant, requiring something the treatment of Fuchsias.

The plant was introduced in 1849 from the Peruvian Andes, and



Fig. 1.—*Cantua buxifolia*.

usually flowers in the spring months. It has many synonyms, amongst which the following may be mentioned—*C. ovata*, *C. tomentosa*, and *C. uniflora*.

TRENCHING GROUND.

It would save much labour if Mr. Iggulden could prove to us that trenching is not judicious. I for one find a great difficulty in getting trenching done, as our labour in winter is greatly reduced, the days are short, and, in addition, there is often some extra work, notwithstanding the reduction of men. We never miss a winter without having a part of our kitchen garden trenched; thus the principal parts are trenched every four or five years. When the bottom spit is brought to the top it has the same appearance as the one placed at the bottom, so that we have two spits deep of equally good soil, and I think Mr. Iggulden will pardon me for still believing that this will be better than one spit deep of good soil existing on a poor sour unworkable subsoil, which it must be if left unworked for many years. In the latter case I should not think of bringing the bottom spit to the top, but should bastard trench it, at the same time working in a good dressing of manure, leaves or leaf mould, ashes, or anything I had at hand that I thought would enrich it and make it workable. After it had been served so a few times a part of it could be brought to the surface, and if done in autumn or early winter the frosts of winter and the showers in spring would, with a good working about with the fork and rake, make it sufficiently sweet for planting on, although I should not, if it could be avoided, sow small seeds on such a ground the first year.

So far, I suppose, I have got too deep for Mr. Iggulden, as he believes that bottom-action should be encouraged near the surface—that is to say, in the top spit. Of course, he does not suppose that such vegetables as

Carrots, Beetroot, Parsnips, Onions, Peas, and Scarlet Runners could be kept on the top spit. With all such plants and others it seems necessary that they should go deeper. It is well known that plants draw their nutriment through the extremities of their rootlets, and if the ground is only dug one spit deep, such rootlets that are obliged to go into the bottom sour, hard, poor, subsoil would find but little nourishment, as a very small portion of the goodness of the top soil and manures soak through the mass of soil underneath, as worms and other insects have holes bored through the bottom which make excellent drains for the water to pass away, carrying with it a portion of the nutriment from the top rich soil. In ground that has not been trenched for a long time, there is formed at the bottom of the first spit a kind of crust, and when the water gets down to this it cannot pass so readily through, but it works along the surface of this crust until it comes to one of the holes, down which it goes into the drains; while if the bottom is broken up, the holes are broken also, the ground is equally loose all through, the rains will pass through the whole mass, taking with them the nutriment from the manures above, the soil acting as a filter, and by the time they have percolated through the whole mass very little is left in the water to drain away. All is in readiness for the roots to feed upon when they have made their way into it. It will be found that such vegetables as Cauliflowers, Brussels Sprouts, Onions, Peas, Beans, and others will reach this second spit just at a time when a great demand is made upon them to finish their crop. This is like a turning point to them. Having grown luxuriantly up to this time, they have got through the first spit, will they turn back again? I think not, and if not, the crop must be much poorer than if they had a rich soil to grow into.

Our kitchen garden here is rather light, but notwithstanding the hot dry summer it has perfected excellent crops. Although Peas felt the need of water very much, yet not a drop of water could be taken into the kitchen garden, as we had none to spare for it, and it is my opinion that if the ground had not been well trenched it would not have perfected them so satisfactorily.

I quite agree with Mr. Jggulden that fruit trees can, and do, root too deeply, yet no one would consider the roots of fruit trees deep enough that did not go more than one spit down. I think mulching an excellent practice, that cannot be too extensively carried on either for fruits, flowers, or vegetables.—J. L. B.

NOTES ON CHRYSANTHEMUMS.

POMPON CHRYSANTHEMUMS.—On page 547 "L. H." draws attention to the merits of Pompon Chrysanthemums for exhibition, and quotes an instance of the Judges at the Kingston Show awarding the first prize to a stand of highly developed blooms that had been disbudded, whereas in his opinion stems not so disbudded would have been the most natural and proper method of exhibiting them. Although in a decorative sense plants of some varieties of Pompons are certainly best not disbudded, I am of opinion that they look best and are more attractive for an exhibition when disbudded than when they are not. Why not exhibit the large-flowering incurved and the Japanese varieties without disbudding?

When exhibiting plants of the Pompon section a few years ago I always adopted the practice of disbudding to one bloom on a shoot all the Anemone varieties, such as Antonius, Mr. Wyness, Marie Stuart, Astrea, Madame Montels, Roquelain, and Rose Marguerite. Such varieties as Madlle. Marthe, Bob, St. Michael, Golden Circle, and Cedo Nulli were also served the same, with the exception of very strong shoots, and then only three blooms were left, and I invariably met with good success—that is so far as first prizes were concerned. I will name one instance. Take a plant of that fine Anemone variety Antonius in the middle of October and leave three bloom buds on a shoot; take another and disbud to one bloom on each shoot, and mark the difference between the plants at show time. I have found that the one disbudded to a single bloom has been by far the best in size, form, and colour, holding its flower heads erect, and showing well its cushion-like florets, while the plant with three blooms left on each shoot has hung down its head, the flower stalks apparently too weak to hold them up. Any grower of such varieties as Antonius and Mr. Wyness may have noticed their tendency to droop and lose their beauty prematurely, and that when the flower buds are well thinned they look very much longer. One of the best dark varieties, Bob, expands its blooms when well grown as large as a five-shilling piece, but when not so disbudded it is about the size of a shilling. For exhibition purposes I certainly am of opinion that a plant with from fifty to a hundred well-developed blooms is far superior to one with three times that number of inferior blooms. There is one variety of Anemone Pompon that does not improve so much as others by disbudding, and that is Calliope. It will train well and make an effective specimen in a group of six or twelve, its peculiar brickdust-looking colour showing up well against whites and yellows.

DWARF PLANTS.—Small decorative plants in 48-pots disbudded to about three blooms to a pot would certainly not be commendable. At the present time I have some freely treated plants that have been most useful, and wish I had more of them. Cuttings of the four following—Cedo Nulli, Lilac Cedo Nulli, Golden Circle, and Salomon—were taken and inserted the third week in July in sandy soil and placed on the wall of the Cucumber house. Three cuttings were placed in a small 60-pot, and in a fortnight they were rooted and placed in a light greenhouse to get more air for a week or so. About the middle of August the points were pinched out, and the plants were then shifted into 5-inch pots without dividing them, placed outdoors with the other Chrysanthemums

in the full sun, and had the same attention as to watering and housing. Three small sticks about 6 inches long were placed to each plant to draw them out a little, and at the present time the Cedo Nullis are about 6 inches in height and the other two 9 inches, with about twenty to twenty-four blooms on each. Thus grown, although the blooms are not so large, they are very pretty, and make excellent window plants. It is not, however, every variety of Chrysanthemum that will succeed with such treatment.

A very good suggestion is that on page 548, taken from the *Essex County Chronicle*, and that is for societies to offer prizes for the best plants grown in 32-size pots. It would not only be a novel and interesting class, but would bring to the front varieties most useful for decorative purposes, as most gardeners that exhibit not only have to grow for exhibition but have to furnish small plants for conservatory or use in rooms. I have no doubt that many of the Japanese would answer for this purpose—one I know will (Fair Maid of Guernsey), struck late and grown in 5 or 6-inch pots.—A. HARDING.

STRIKING CUTTINGS OF CHRYSANTHEMUMS.—There are many opinions about the best time to strike cuttings of Chrysanthemums, but much depends upon the use they are intended for. For specimen plants my advice is to take the earliest and strongest cutting that can be found. As some varieties are very shy in producing shoots, I would advise taking cuttings from the green tops in September, but they must not be allowed to produce flowers, as many of them will; they should be kept growing slowly. To obtain large blooms for exhibition I find the latter part of February quite early enough, or even March is not too late for the purpose. The cuttings take root more freely than autumn cuttings do as a rule; they grow with greater vigour, and are not so liable to receive injury as autumn plants. By striking cuttings in March I find the ladder or steps can be dispensed with in disbudding or examining the blooms for insects, &c.; and tall-growing varieties can be cut down in May with greater certainty of their breaking readily at the point where cut. Autumn-struck plants become hard in the growth in April and May, and the consequence is the plants throw up suckers from the base. Should they break at the cut they are more liable to be broken by winds, in fact they will hardly support their own weight; whereas spring cuttings can be shortened almost where you please, and will show very little of the operation afterwards. March is a good month to strike cuttings for general decorative purposes, in fact I prefer it to any other month, and my experience extends to nearly twenty years.—R. OWEN, *Floral Nurseries, Maidenhead.*

LATE CHRYSANTHEMUMS.—MISS MARÉCHAUX.—I am glad to see this valuable variety is receiving notice in your paper. I have cultivated Miss Maréchaux for some years, and in my opinion we have no variety so good in substance of petal and so lasting after being cut. The chief difficulty I have found to be is obtaining strong cuttings early enough to make a good plant, as it is a slow grower.—S. A. TAYLOR.

RAISING NEW VARIETIES OF CHRYSANTHEMUMS FROM SEED.—There are many interesting and suggestive hints in Mr. Burbidge's new book on the Chrysanthemum, which you kindly permitted me to refer to in your last issue, deserving of much more than passing notice, and the above is a point to which he frequently refers. "I most earnestly," says he, "counsel all growers of the Chrysanthemum to raise a few seedlings every year, even if it be from imported seed," with the view of securing better varieties in the several sections, and to emphasise colour, and that fragrance a few kinds possess. I may premise I am not now referring to raising single varieties from seed—that seems easy enough—but how are we to get seed from the customary double varieties? Well, I am going to mention a method I propose to try the coming season, and that so far as I know has not hitherto been resorted to, though accessible to all, that I should like your opinion and the specialists among your correspondents as to the probabilities of success. All Chrysanthemum growers are acquainted with the premature flower buds that appear from May to July, not the crown bud, according to the variety and the system of growth, and that all authorities invariably recommend to be pinched out, more especially when grown for exhibition purposes. The few hundreds I grow are for church decoration and cutting purposes chiefly, with a few dozen for large blooms, so I was curious enough to allow those early flowers to remain in a few instances. The result has been that with about half a dozen varieties the buds referred to came single or semi-double, and now show every indication of perfecting heads of seeds. The most promising heads are on Refulgence, Eve, Prince of Wales, Alicia, two Pompons, and a Japanese I got as Daimio, a beautiful lilac-pink, tinted white in the centre. Unfortunately three of them were trained and nailed against a south wall, and may not have as much fair play as if under glass, and lifting might only spoil the chance of any seed. Over those I have placed sheets of glass, and they so far seem promising—no frost having done them any harm so far. Those in pots I have removed from the greenhouse to my sitting-room, where a minimum temperature of 50° Fahr. can be maintained, and that indispensable adjunct—a dry atmosphere. Do not you therefore think I may succeed? If so, here is a method of raising Chrysanthemums from seed open to all.—W. J. MURPHY, *Clonmel.*

[The experiment alluded to is well worth trying. The late Mr. Beaton described many years ago a method of flowering Chrysanthemums in early summer, and such early flowers ought to produce and ripen seed in this country. The buds referred to by Mr. Murphy are crown buds.]

LATE-FLOWERING CHRYSANTHEMUMS.—In reply to Mr. Featherstone, page 517, respecting late-flowering Chrysanthemums, I can with confidence recommend one variety that would be a valuable addition to his list. The Japanese variety Ceres (Jackson's) is pure white when open, but with a very slight tinge of pink on the outer petals. It is something in the way of Fair Maid of Guernsey, but differing from that variety in its strong robust habit and foliage, and the florets are shorter but of more substance. It is a naturally late-flowering variety. Although it will show its buds in August at the same time as the general collection, it will not flower until the end of November, and it will keep good until Christmas. The variety under notice was exhibited by Messrs. Jackson and Sons at the December meeting of the Royal Horticultural Society in 1882 and a first-class certificate awarded it. I have described it more particularly, as unfortunately there are three Ceres in the lists, which would be likely to cause great confusion. The one I received from Messrs. Cannell some time prior to 1882 was also a Japanese variety and of a rosy pink colour, but I have ceased to grow it now, as the flowers were too small. The other Ceres I am not acquainted with. It is a continental Japanese variety, sent out this spring by De Reydellet, and described in Messrs. Cannell's catalogue as canary yellow, petals vertical, flowers large. It is a pity that more care is not taken by our continental raisers to avoid giving the same names to their new varieties as have been already bestowed on older varieties, thereby causing no end of confusion to the trade as well as to private growers, and may probably lead to serious results at exhibitions.—C. ORCHARD, *Kingston-on-Thames*.

THE NATIONAL AURICULA SOCIETY (SOUTHERN SECTION).

I THINK there is something ungenerous in the remark which appears in your report of the meetings of the National Auricula and Carnation and Picotee Societies, that Mr. Dodwell had "succeeded in bringing up a number of members who do not usually attend the meetings." They were nearly all country members, and they came to the meeting because they believed (as I myself most earnestly do) that a great wrong has been done. I think the remark above quoted applied to the other side also. The fact that the confirmation of the objectionable minutes of an informal and irregular meeting was confirmed by a majority of one only, added to the significance of the protest handed in by Mr. Dodwell, should have made the dominant party pause in their high-handed course of action and reconsider their position. I know for a fact that two of those present on October 14th regard the proceedings as irregular and indefensible. I have before me the names of those who voted on December 9th, and a Mr. Walker voted in error in favour of the confirmation of the minutes, not quite understanding the Chairman's method of putting the question. Mr. Pohlman, jun., of Halifax, unfortunately arrived too late to vote with Mr. Dodwell.

Up to October 14th the National Auricula Society and the National Carnation and Picotee Society had been two distinct organisations under separate Committees, as they are in the north, each putting forth its own schedule of prizes and regulations. A small and informal meeting, powerless to take any action in the matter, agrees to coalesce the Societies, appoints one committee to manage them, setting aside the rights of others who had derived their authority from annual general meetings nearly a year previously, and by the exercise of a kind of *coup d'état* assumes the functions of annual general meetings. As a member of the Committee of the National Auricula Society from the very first, I was not only not invited to the meeting on October 14th, but actually deposed from my seat on the Committee. Such a meeting, from which any person likely to sympathise with Mr. Dodwell was apparently excluded, could not transact the business properly appertaining to the annual general meeting of the National Auricula Society. The blending of the two Societies is not only irregular, but a grave mistake, and, though blended under one government, it was stated by Mr. Douglas that a member of the Committee must subscribe the sum of 10s. to both Societies. I presume that if this is true of committeemen—and Mr. Douglas said it was—it will also be true of members. This is most unwise, and it will be found to be injurious in action. The annual general meeting should have had nothing to do with the minutes of a self-appointed sub-committee. The members did not appoint this Committee; they took upon themselves to act, and thus by a majority of one only, forced the members to confirm their action. The Chairman (Mr. Shirley Hibberd) stated that both Secretaries were equally to blame, but the Committee, in spite of this, supported one and ejected the other. This is most unfair. I have had now something like twenty years' experience in various forms of the working of horticultural societies, and I have always found that when the Secretary is one of the principal exhibitors it always leads to unpleasantness. The small exhibitors did undoubtedly feel that their interests were represented in Mr. Dodwell. I am writing now of the National Auricula Society. I am not a member of the Carnation and Picotee Society. If, as some have stated, it was necessary to get rid of Mr. Dodwell, then the Committee of the National Auricula Society should have been specially summoned to consider the matter. That body would have decided on a course of action, and recommended it for adoption to the annual general meeting. There is not a person who was present on October 14th but would say this was the proper and legal course. Why such a false and crooked policy was favoured is beyond my comprehension. The result is that I and not a few others find ourselves rudely thrust aside, as if we had no rights as members of the National Auricula Society; while I have this further special grievance, that I am deposed from a seat on the Committee of

that body without power of or opportunity of appeal.—RICHARD DEAN *Ealing, W.*

[The remark to which Mr. Dean takes exception was the simple embodiment of a fact, the existence of which he admits and explains, so nothing more need be said on that matter. The "blending" of the two Societies is a fair subject for discussion on its merits. We suspect that it is not necessary to subscribe to both Societies to become a member of one of them, but it may be necessary to do to be a member of the Committee under the rules established for the government of the Societies; this matter, however, is perhaps not made officially clear. In any further discussion it may be well to remember that the weakness of a case is often reflected in the strength of the language employed to sustain it.]

CULTURE OF EUPHORBIA JACQUINIÆFLORA.

ALTHOUGH the genus Euphorbia is a very large one there are but few species that commend themselves to the attention of cultivators of stove plants. Euphorbia jacquiniæflora (or fulgens) I think occupies the most prominent position amongst those grown. It is very different in habit and general appearance from the rest. It blooms at the present season of the year, at which time its intense scarlet flowers, wreath-like shoots, are unsurpassed by any plant in cultivation. It is a free grower and equally free in blooming. The flowers last well either on the plant or when cut and placed in water. It gives a succession of flowers from a second growth, which the plants make after the first flowering shoots have been cut. The beauty of the flowers is much increased by the dark green lanceolate leaves, which are very slightly distributed amongst them. It combines well with almost any other varieties of flowers, being especially suited for employing in large vases, where its flat sprays can with the greatest advantage be employed as a base for lighter-coloured flowers.

Some growers have experienced a difficulty in striking cuttings of this plant. The soft sappy nature of the young shoots, if taken after they have extended considerably, causes them to be very subject to damp; in fact, if cuttings be made in the ordinary way very few will root. If, however, in the spring the young shoots that are made after the plants have bloomed are taken off with a heel when about 5 or 6 inches in length and inserted in small pots, well drained, filled with silver sand, placed in a temperature of 70°, and covered with propagating glasses, not one in twenty will fail to root. It is the heel of partially solidified wood that is essential to success. So managed, they will root in a few weeks, after which the glasses should be removed and plenty of light given. When they are fairly established transfer them into 4-inch pots. They thrive well in good fibrous loam, to which should be added one-fifth part of sand, and drain the pots sufficiently, as the roots are very impatient of stagnant moisture, and too much water should not be given until the roots have taken well to the soil. The plant has naturally an erect habit, not disposed to branch much. To counteract this the shoots should be stopped or bent down when they get fairly into growth, so as to induce them to break back. The temperature may be allowed to rise in the day to 75° or 80° with sun heat, ventilating in the morning according to the state of the weather, and closing the house whilst the sun is on the glass sufficiently to raise the heat for an hour or two to 80° or 85°, syringing at the same time. Care should be taken at all times, but more especially after potting, not to give too much water, for this Euphorbia does not make so many roots as many plants do, and will not bear the soil being too wet. They will require a thin shade when the sun is powerful, but should have plenty of light, or the natural straggling habit will be increased. By the end of June they ought to be placed in pots 7 inches in diameter, which will be large enough, employing soil similar to that in which they were last placed, with the addition of a small quantity of old decayed manure. Again tie down the shoots, bending the points down considerably, which will cause several of the eyes to start. With this Euphorbia, as the plants become larger, bedding the shoots is preferable to pinching out the points, as it will induce more eyes to break. Continue the treatment as to heat, water, air, and a thin shade when necessary until the end of August, when dispense with shading and the use of the syringe, ventilating more freely, which will gradually suspend further growth and ripen the shoots. As the autumn advances reduce the temperature to 60° in the night, allowing an advance of 5° more in the day. If they should be required in flower by the end of the year, it will be necessary to keep some of the plants 5° warmer, standing them where the tops of the shoots will nearly touch the glass. This is necessary to impart both colour and substance to the flowers. As the flowers become apparent at the axils of the leaves the plants will be greatly benefited by an occasional supply of weak liquid manure, which will not only assist the first blooms they make but enable them to make the second growth strong, which will also bloom. Such plants as are grown cooler to succeed the first must not have too much water at the roots, especially if the temperature is kept a little under 60° in the night, but it is not safe to have them in a much lower temperature than this.

After the flowering is over allow the soil to become considerably drier, and head the plants down to within 6 inches of the pot, keeping them in a temperature of about 65° in the night and giving no more water than will prevent the soil becoming quite dry until they have made several inches of growth, when, if more plants be required, the shoots may be taken off and struck as in the preceding spring. The other plants should be turned out of their pots and two-thirds of the old soil removed, giving them 2-inch larger pots, which will be large enough to grow them in through the ensuing summer, assisting them with liquid manure when the soil is well filled with roots, treating them in other respects as advised for the preceding season.

This Euphorbia is also very suitable for growing on a back wall, in which position it looks well; but the flowers will not be so highly coloured as when they expand near to the glass. If planted in such a situation the border should be limited in size, for if the roots be in too great a body of soil they are liable to decay when the plant is hard cut in, which it requires after blooming, and from then until some growth has been made the soil must be kept almost dry. Through treatment the opposite to this Euphorbia jacquiniæflora when so situated very often dies after being cut back. This Euphorbia is less subject to insects than most stove plants, although thrips and spider will sometimes attack them; for these syringing and fumigating afford the best means of destruction. Should mealy bug appear, lay the plants on their sides and repeatedly syringe freely with tepid water, washing them with insecticide in the winter when at rest. White scale is so difficult to thoroughly eradicate when once it has attacked stove plants such as these that are easily propagated and quickly grown, that it is much better to start afresh with clean cuttings, which should be inserted as previously recommended.—J. H. WALKER, *Hardwicke House Gardens*.



THE following are the dates of the Promenade, Plant, and Flower Shows of the ROYAL HORTICULTURAL SOCIETY, to be held in the Conservatory during 1885. March 10th, 24th, and April 14th, Promenade Shows; April 21st, National Auricula Society's Show; April 28th and May 12th, Promenade Shows; May 26th, Show of Pot Roses, Azaleas, &c.; June 9th, Show of Orchids, &c.; June 23rd, Show of Pelargoniums, &c.; July 7th, National Rose Society's Show—Roses; July 14th, Show of Plants and Flowers; July 28th, National Carnation and Picotee Society's Show, and Show of Begonias, &c.; August 11th and 12th, Show of Plants and Flowers; September 8th and 9th, Show of Dahlias, Grapes, &c.; October 13th, 14th, and 15th, Show of Fruit and Vegetables. Annual General Meeting, Tuesday, February 10th, at three o'clock. Fruit and Floral Meetings will be held on Tuesdays at 11 A.M.; January 13th, February 10th, March 10th and 24th, April 14th and 28th, May 12th and 26th, June 9th and 23rd, July 14th and 28th, August 11th and 25th, September 8th, October 13th and 27th, November 10th, December 8th.

— THE third edition of Wright's "MUSHROOMS FOR THE MILLION" is now being issued. It is revised and enlarged, but the price remains the same, 1s.; post free, 1s. 2d., from this office.

— THOUGH FROST has been prevalent in various districts of the country during Christmastide, there has been none in the metropolitan district, but the ground has been open, dry, and in excellent condition for planting. There was, however, a slight frost yesterday (Wednesday) morning.

— "D." writes:—"I have lately planted some thousands of CROCUSES, and have had them destroyed by rats, after taking precautions by putting soot and petroleum on each hole, also gas tar in their runs. Can any reader recommend a preventive besides poison?"

— AT the annual meeting of the LINCOLN CHRYSANTHEMUM SOCIETY it was decided that the next exhibition be held on November 17th and 18th, and that prizes, open to all, of £10, £5, and £2, be offered in a class of forty-eight cut blooms. The statement of accounts showed a balance in favour of the Society of £53 13s. 6d. Mr. R. J. Ward is Chairman of the Committee, and Dr. G. M. Lowe and Mr. C. W. Pennell Honorary Secretaries of this well-managed and prosperous Society.

— AT the December meeting of the EDINBURGH BOTANICAL SOCIETY the officers for 1885 were elected as follows:—Professor Dickson, President; Dr. R. Gray, Dr. William Craig, W. B. Boyd of Fallonside, Dr. T. A. G. Balfour, Vice-Presidents; Charles Jenner, Alexander Buchan, Dr. Hugh Cleghorn, Rev. John Macmutrie, Robert Lindsay, Patrick Geddes, Symington Grieve, Andrew Taylor, William Sanderson, and the Rev. J. M. Robertson, Members of Council; Professor Douglas MacLagan, M.D., Honorary Secretary; Professor Dickson, Honorary Curator; Andrew P. Aitken, Foreign Secretary; P. Neill Fraser, Treasurer; and J. M. Macfarlan, D.Sc., Assistant Secretary.

— MR. A. ANDERSON, Lea Woods, writes:—"Some discussion has

taken place of late respecting the keeping qualities of MRS. PINCE'S MUSCAT AND LADY DOWNE'S GRAPES, so I give my experience of them. In a lean-to vinery here I have the two varieties growing side by side; both are in good health, and produce good crops. As they are grown for late keeping I have a number of bunches hanging at the present time, but I must confess that Lady Downe's has not the good keeping qualities of Mrs. Pince's Muscat; at least such is the case here, as I am cutting Lady Downe's as fast as possible, but Mrs. Pince has not a bad berry."

— MR. J. REID writes, "The GOLDEN HAMBURGH GRAPE under high-class cultivation may be grown to great perfection either for the dinner table or for competition, and where other Vines of that colour do not prosper the above might. It produces large bunches and berries of an oval form, and gives great satisfaction at table here. Mrs. Pince's Muscat is also successfully cultivated. The produce of this Vine has generally been satisfactory in a late house. The crop this year is very fine, the fruit has coloured and swelled to perfection under moderate cropping and careful thinning. It generally produces very large bunches and berries, and requires to be much thinned. Bowood Muscat does better here than Muscat of Alexandria. We consider it a better Grape than that variety; it is more certain, and should have longer spurs to ensure a crop of Grapes."

— GRAPE AND ORANGE CULTURE IN NEW SOUTH WALES.—The produce of the colonial vineyards during 1883 was 589,604 gallons of wine, 4162 gallons of brandy, and 1377 tons of table Grapes. In the same year the colonial orangeries produced 8,102,658 dozen, or nearly 100 million Oranges, the greater portion of which was equal to the finest fruit of southern Europe.

— THE annual general meeting of the KINGSTON AND SURBITON CHRYSANTHEMUM SOCIETY was held on Wednesday the 17th ult., when there was a large attendance, including Mr. J. Puttock (in the chair), Mr. T. Jackson (Hon. Sec.), and Messrs. Shepherd, Child, King, Woodgate, Hardy, Orchard, Attrill, Hinnell, Fyfe, Rolt, Lyne, Minett, Lemon, Benson, Chadwick, Moorman, McPherson, Slade, and Caute. The Secretary laid before the meeting the statement of accounts, which had been audited by Messrs. Parham and J. A. Fricker. The subscriptions received amounted to £115 1s. 6d.; the takings at the door on the two days of the Show to £132 9s., and sale of tickets realised £5 2s. These sums with the balance in hand made up a total available fund of £335 6s. 8d. The expenditure in all was £230 3s. 11d., of which £108 9s. 6d. was paid away as prizes, and the total balance in favour of the Society was £105 2s. 9d., thus divided—Reserve fund £40; reserve prize fund, £30; general fund £35 2s. 9d. Mr. Jackson mentioned that the subscriptions showed an increase of £11, which he considered was very satisfactory; and the door money had increased by about £30. The Chairman thought from the figures that it was evident the Society was in a very satisfactory and prosperous condition. He considered it was a good plan to put part of the balance aside to go towards next year's prize fund. After votes of thanks had been passed for the services rendered to the Society by the officers during the year, the meeting proceeded to the election of officers for the coming season, and Mr. Jackson, in proposing the re-election of Mr. Davis as President, said that gentleman had been with them since the foundation of the Society, and he presumed that having held the office so long he was perfectly satisfied with the way in which the business was transacted. Mr. Davis showed by his labours that he had the interest of the Society at heart. Mr. King seconded the motion, and it was carried. Mr. Jackson also proposed the re-election of the Vice-presidents (with the addition of the name of Dr. W. H. Roots) and lady patronesses, which was seconded by Mr. Slade and carried. The Honorary Secretary and Treasurer were re-elected, and the Committee, chosen by ballot, was thus composed:—Messrs. Attrill, Bates, Child, Fyfe, Hardy, Hinnell, King, Lyne, Orchard, Puttock, Rolt, Shepherd, Woodgate, Moorman, and Slade. Mr. Chadwick called attention to the want of a few more classes open to amateurs, and this will be discussed by the Committee. A vote of thanks to the Chairman concluded the proceedings. Next year's exhibition has been fixed for the 10th and 11th of November.

— CORRESPONDENTS of the *Manchester City News* give the following particulars of two OLD IVIES SEVERED FROM THE ROOTS. Mr. J. Wainwright observes:—"In answer to Mr. William Plant's inquiry as to the common Ivy growing without ground roots, there is a good instance of it on the entrance lodge to Brabyns Park, Marple. The odge is on the main road at the top of Brabyns Brow, a few yards above

Marple Station. This has been flourishing, though severed from the ground, for a dozen years within my knowledge, and is now very luxuriant. Mr. Grindon and a great many members of the Manchester Field Naturalists Society are familiar with this example, which they examined last year. It may be interesting to add that it was an old plant when the ground root was removed, and the main stem on the wall was very thick—say 3 inches in diameter—which thick stem serves, no doubt, as a sort of ground root for the plant. Plants of only a few years' growth usually wither and die when so severed from the ground, which rather goes to show that the rootlet claws or 'holdfasts' do not furnish the necessary succour to maintain life."

— THE other instance is thus given:—"I visited Kenilworth about forty years ago, the chief front of the castle was covered with Ivy which had spread from one common root; but whether from injury or natural decay the main stem of the Ivy was severed from the original roots, at least it had no connection with the ground. Instead, a great wide flat trunk (I can call it nothing else) clung to the stone wall some 3 feet from the soil. Consequently the immense plant, with its 2-or-3-foot-wide stem must have held to the wall by its rootlets or suckers, and drawn its sustenance thence, or rather from the rains of heaven and the earthy matter deposited by the winds upon the slowly mouldering stone."

— THE immense economical importance of Government botanic gardens, especially in young colonies, is well shown by the last report of the Curator of the BRISBANE BOTANIC GARDENS. Omitting the distribution of ornamental trees, shrubs, &c., to the gardens of public institutions, as well as that of ornamental pot plants, we find that economic plants have been distributed on a very large scale. The demand for these has been unprecedentedly large, and no application is ever refused so far as it can be supplied. About 3000 economic plants were sent out during the year; these consisted chiefly of various kinds of Coffee, Tea, Cocoa (*Theobroma Cacao*), Cinchona, and Vanilla. Grafted Indian Mangoes and plants of the Brazilian Nut (*Bertholletia excelsa*) have been given to likely growers, and the demand for the latter is so great that application has been made to the universal feeder of these institutions, Kew, for more. Besides acting as a collecting and distributing agency, the Brisbane Gardens do what is perhaps of even more value—viz., ascertain by experiment the conditions under which certain foreign plants will grow best in the colony. The most important trials recently have been with regard to Cinchona, which, Mr. Pink shows, may by care in its early stages be successfully cultivated in Queensland. The Hop plant has been tried, and appears a success, 10 cwt. being the produce per acre the first season, while in England under similar circumstances it is only 4 cwt. Sugar is at present the staple of the colony, but no efforts are spared to discover new kinds elsewhere which may be better adapted to the place. One hundred tons of various kinds of cane, chiefly from Mauritius, were sent to planters during the year. Economic and valuable timbers also receive much attention, and the gardens have now ready for transplanting 20,000 trees of various kinds, including Cedars, Olives, Silky Oak, English Oak, English Ash, Poplars, and Chestnuts. The recent experiments have conclusively shown that Queensland can introduce among her staple produce crops such valuable and remunerative products of the soil as Coffee, Hops, and Cinchona. As an example of the care and labour devoted to the work, it may be mentioned that every method of cultivating the Cinchona in Ceylon and South America was tried in the gardens without much success; and finally Mr. Pink was compelled to devise a method of his own, which proved successful.—(*Nature*.)

GARDENERS AND READING.

GARDENERS are generally supposed to be a reading people, and doubtless much of the esteem they are held in as a body of intelligent men is based on taking this supposition to be correct. Some hard, if true, things have been written about members of the craft who do not read. But it should not be forgotten in extenuation of what may seem to be a failing that on their side they can point to the testimony that "much study is a weariness to the flesh." I give them the greater credit for their strict adherence to this teaching, inasmuch as I must confess that in my own case it has been very much the same. In the words of a very old writer, "to me books are masters that instruct without rods and ferulas, without hard words and anger. If you approach them, they are not asleep; if you interrogate them, they conceal nothing; if you mistake them, they never grumble; if you are ignorant, they cannot laugh at you." For these reasons books are to ordinary people almost necessities of existence. Of course, it must be conceded that things have altered considerably since the above quotation was first written, for we may investigate some books as

diligently as we please, and in an altogether different sense from that contemplated by the author; they conceal nothing, simply because they are mere sounding words. On the other hand, if we make mistakes and get grumbling in print it is not long before we have our ignorance exposed, and very possibly get well laughed at into the bargain. I make those concessions perfectly conscious of their fullest meaning. Well, but is it a fact, and what reason have we to suppose that many gardeners belong to the non-reading class? The number of journals devoted to the requirements of gardeners should go far to show that a large number of them must at least purchase the material if they do not put it to use. It is now nearly thirty years since I first made acquaintance with the *Cottage Gardener*, and I do not think any one thing would show the wonderful amount of support given to its conductors from that time till now than would the presentation of a reprinted copy of thirty years ago to each reader of the Journal of to-day. I make bold to assume that it has been alone on account of the support given by readers of the Journal that it is the marvellous threepenny-worth we see it now, and that we may conclude if some gardeners are abstemious in reading many must indulge more freely. But at the same time the fact is patent, that outside the gardening fraternity altogether there is an immense constituency who, in one way or another, are sufficiently interested in gardening pursuits to make a gardening paper a necessity. Taking these facts into consideration we may very fairly hesitate before concluding that the gardening papers prove the case.

Coming now to the evidence of gardeners themselves, it has over and over again been stated that where libraries are attached to gardens the books are not read, and where gardening papers are bought for the young men it is no rare occurrence for them to be laid aside uncut. Judging from personal experience there would appear to be too much truth in these statements. I have known instances of men who were not even aware of the nature or the names of books placed at their disposal and for their sole benefit, and of gardening books lying for years on the shelves of their cases without having their pages cut. And it is not alone of young men this can be said, for I meet with head gardeners to whom the horticultural press is unknown. They jog on from year to year in the same smooth rut. What you saw amiss ten years ago you may find unchanged to-day, their entire stock of knowledge being as precise, as limited, and as unchangeable as the alphabet. If they forget nothing, neither, may we say that they ever learn anything.

Although it would be of no use writing for either head or under gardeners who do not read, their very act of abstention from books being its own punishment; still, to those who do read it may be possible to say something worth considering. Now, it is a very certain proposition that the more intelligent a young man is the greater is his likelihood of getting on. At the same time he must guard against relying on mere knowledge acquired by reading. It is, no doubt, a very laudable object for a young man to drill himself in the many phases of garden chemistry, but his master will rather look to his behaviour between the stilts of a wheelbarrow, or note whether he loads that vehicle in a way to escape littering walks, or in just an opposite manner. Nor will a gardener consider a young man's accomplishments as a theoretical hot-water engineer, nor his knowledge of the principles of ventilation, of much account if, on the one hand, he fails as a stoker, or, on the other, damages a houseful of Grapes through inattention to airing. Thorough efficiency as a workman is the first thing he has to set himself the task of attaining, then let him look to the training of his intellect.

Now comes the question of what to read. We will take that first, and then I may have something to say what to avoid in reading. Although this is written for a horticultural paper I do not hesitate on that account to say that these are not of unalloyed benefit to young men unable to judge from practical experience. But much may be left to the common sense of readers. Gardeners must keep themselves abreast of the times, and a study of the current literature of the craft is almost the only way open to them to do so. As to books, young men should make themselves acquainted with the various sciences connected with their calling, and in order to do this avoid any particular book which may profess to contain everything about every one of them, and rather purchase university text books, which may always be depended on as embodying the latest and most reliable views held on the several subjects. Biography, travel, and history should be taken as "light" reading, and a high-class daily newspaper yields much information.

As to the literature that a young man should look doubtfully. I would place much of the ephemeral produce of the times. Novel-reading especially should be eschewed. I esteemed him a wise young man who told me that he had tried novel-reading, but finding them too seductive he had given them up altogether. It is a curious but certain fact that young people who go in for novel-reading become slaves to the habit, while people who give their brains a more stable diet can, as men, read a novel without getting intoxicated over it. Very much contained in popular magazines have the same defect as novels—they do not call for any brain effort. Useful they may be for passing a tedious hour, but young people may just as well have nothing to do with them. It is strange that people fail to realise that the brain can no more be tampered with than any other organ of the body. Employ the hand, the eye, the foot in useful labour, and we educate these members. Let us pass our days in idleness or aimless drivelling work, and they are of slight use to ourselves or to anyone beside. So we can train the ear to music or the tongue to oratory, and just as surely may we train our brains to be useful thinking organs, packed with ideas new and old, ready for our use at any moment. Select reading is one of the most potent means at our command to increase brain power, while all literature that does not meet the wants

of the brain as a thinking organ, if continued in, must be bad in effect. It is impossible for any of us to escape these results.

A word as to the passing of spare time throughout the winter months. It is possible to have too much reading, and instead of making it a study, allow it to degenerate into mere cramming, for it is not so much the amount of study we are able to undertake that is of value, but the assimilating of our studies and making the results a part of ourselves. That is what is of advantage; all other is waste matter. Making notes of the principal points of our reading will be found of great value; we thereby condense the main features of a book and fix them firmly in the memory. Both freehand and geometric drawing is of much value, and many hours may be pleasantly passed in these pursuits. As an old labourer used to say to me when a young man, "Can-do is easy to carry about." Then singing is an accomplishment everyone not physically incapacitated should cultivate. A study of theoretical music is of absorbing interest, while those who attack the mysteries of the violin give to themselves occupation for all odd hours. I can say from experience that nothing rests the mind more than an hour's music, be it instrumental or vocal, and as a family recreation singing holds a first place. Much more crowds on me that I would like to say, but I have already said sufficient.—SYLVANUS.

NOTES ON MONTBRETIAS.

THIS genus may be cited as a very good example of the neglect into which, with a few exceptions, half-hardy bulbs have fallen; but fortunately there are signs of a renewal of the interest taken in these plants, and younger plantmen may have the opportunity of becoming acquainted with many of those gems from the Cape more especially, which now know only imperfectly from description or herbarium specimens, and occasionally see with longing eyes in the plates of the "Botanical Magazine." The Montbretias are placed by Mr. Baker in his "Systema Iridacearum" in that section of Iridaceæ which has irregular flowers, and its two best known relatives are *Gladiolus* and *Babiana*. Its members are, with one exception, natives of Cape Colony and the adjacent districts, *M. laxiflora* being also found in eastern tropical Africa. Fourteen species are mentioned in the work just alluded to as being known, only one of which, *M. rosea*, is, as far as is known to the writer, in cultivation at present. My intention now is rather to draw attention to those which are at present in commerce, one of the most effective having been introduced from South Africa since the publication of the Monograph in question.

M. CROCOSMÆFLORA.—This beautiful plant is the result of the fertilisation of *M. Pottsi* by the pollen of *Tritonia aurea*, and is certainly one which, when better known, will be most popular. It possesses to a considerable extent the characters of both parents. The flowers are of a bright orange tint shaded with vermilion, often freely spotted with purple, and are borne in long branching spikes, usually opening in July and continuing in bloom for at least two months. Its propagation is a very simple affair, as long rhizomes bearing bulbs are thrown off from the parent bulb in all directions, soon producing a colony of young plants, which if taken off and potted soon reach the flowering stage. A first-class certificate was awarded to this plant on its first appearance before the Floral Committee in 1881. It is said to be hardy, but as to this I cannot say anything from personal experience. It forms a very useful plant if potted in light rich soil very early in spring and occasionally indulged with a little liquid manure during the growing season. There are now four good varieties in cultivation—viz.,

M. CROCOSMÆFLORA AUREA.—Differing from the type by its greater height and more expanded flowers of a rich golden yellow.

M. CROCOSMÆFLORA ELEGANS.—Similar in habit to the type, but having the flowers set more closely on the spikes, which are also produced more liberally. The unexpanded flowers are of a bright vermilion. This has also received the honour of a first-class certificate.

M. CROCOSMÆFLORA PYRAMIDALIS.—The three outer segments of the perianth are reflexed, and the colour also is peculiar, being rich apricot shaded with salmon.

M. CROCOSMÆFLORA SULPHUREA.—Very large flowers, also having a greater general resemblance to *M. Pottsi* than any of the preceding; flowers of a dark chrome yellow.

M. POTTSII.—At present the most widely known and appreciated of the genus. Introduced from the Cape a few years ago amongst an importation of *Tritonia* bulbs, and being quite hardy, has soon attained a position of favour amongst cultivators. The plant grows about 3 feet in height, having branching spikes, each bearing from fifty to eighty flowers, orange and crimson, slightly spotted.

M. ROSEA.—Although this species has been much longer in cultivation, it is not so well known, and, indeed, although a pretty plant with its rose-coloured blooms, it does not deserve so large a share of praise as the others would be entitled to. In

conclusion, let us trust that we may soon see some at least of the remaining species in general cultivation.—G. GUTHRIE.

CHRISTMAS ROSES.

THE increasing popularity of these Christmas flowers is far from being undeserved; indeed, they have never lacked intrinsic worth and beauty to ardent lovers of hardy flowers. Until recently the Christmas Rose was never regarded as of any commercial value, but now some acres are devoted to the cultivation of the varieties of *Helleborus niger* to supply the markets. The question of which is the most floriferous amongst the varieties is an important one, because the difference both in this and in the time of flowering among the varieties grown in gardens is wider. For instance, the typical *H. niger*, though not to be despised as a good flowering plant, is inferior to *H. angustifolius* and *H. altifolius*, both for number and quality of blooms. *H. angustifolius*, however, is our especial favourite, and its free distribution of late has considerably lessened the difficulty of procuring it in quantity. It commences flowering about the middle of December, and continues well over Christmas. It has also the advantage of being the purest coloured of all, seldom being tinged with rose, which forms the principal feature in the others.

An ordinary garden soil suits *Hellebores* very well, provided liberal feeding and top-dressing be given when the flowers are being formed in the late summer and autumn. The mulching given in the autumn should be left on until the following spring, when it may be pointed in, a process which will require great care to avoid disturbing the roots. A moist and shaded situation is, moreover, essential to their well-being, and they will be all the better for being near to a wall or building having a north or west exposure.

H. abschasicus owing to the recent very mild weather is also opening its flowers; they are beautifully speckled with dark purple spots, and exceedingly handsome, though not to be compared with the peerless white of *H. angustifolius*. It cannot be depended on to flower so near Christmas unless, indeed, the weather be mild.—M. S.

CHARLTON HOUSE.

THE rapidly extending area of the suburbs of London is fast extinguishing the once sylvan beauty of the surroundings of the few remaining ancient baronial residences. The same is going on, more or less, around all our large towns, and the fate is sealed of many a fine old mansion and park. Such in a great measure is, and will eventually be, the fate of the once beautiful village of Charlton and its manor house. Evelyn, who wrote two hundred years ago (and who is considered no mean authority on landscape beauty), describes this village and its surroundings as "a prospect, doubtless, for city, river, ships, meadows, hills, woods, and all other amenities one of the most noble in the world;" and this only seven miles from London. It is far different now. It was doubtless owing to the scenery that the accomplished and scholarly Sir Adam Newton was attracted there, and induced him to build the present ancient and noble mansion in 1607, in order to conduce to the better accommodation and reception of his royal pupil, Prince Henry, son of James I., to whom Sir Adam was tutor.

This stately edifice occupies a commanding position and possesses an extensive range of view of the Thames, and far beyond its opposite shores into Essex, as well as for miles across the counties of Kent and Surrey. As will be seen from the engraving (fig. 2), the house is built in the form of an oblong square, in a most substantial manner with red bricks and massive stone facings, projections, and balustrades, and although built so long ago, is still in an excellent state of preservation. It will not be out of place to describe in passing a few of the many beautiful objects that are so full of interest in the interior. Specially noteworthy is the magnificently ancient carved panelling around the principal rooms. The principal staircase, too, is built in massive Chestnut, with arabesque balustrades of the Tuscan, Corinthian, and Ionic orders. In the drawing-room may be seen a splendid marble chimney-piece, which is so highly polished that the surrounding scenery is reflected therein to a great extent; indeed, a tradition is preserved anent this to the effect that a certain noble lord whilst looking at this one day saw a robbery being committed on a neighbouring hill, whereupon he sent out his servants and captured the thieves. The massive doors with their ponderous bright iron hinges and fastenings are the same as were in use in Sir Adam Newton's time. Ancient armour, as might be expected, abounds in most of the principal rooms. Sir Adam Newton did not long survive the completion of this stately mansion, being succeeded by his son, Sir Henry Newton, after whose decease it eventually came into the possession of the Wilson family, who have ever since held both the house and manor of Charlton. Several of the present baronet's ancestors have figured conspicuously in history, and one of them, Sir Thomas Maryon Wilson, Bart., was a botanist of high standing during the early part of the present century, as well as a great patron of horticulture. The many beautiful trees and shrubs, as well as arrangement of the flower and pleasure gardens, owe their existence to his skill and good taste. He was passionately attached to hardy plants, and caused a great number of such as were available in his day to be planted in the beds and borders.

The park, which is upwards of 100 acres in extent, contains many splendid examples of ancient Oaks, Elms, and other British trees, and with which the landscape is beautifully diversified. There is also a noble avenue of Elms which for size and grandeur will compare with the finest examples in Britain. These must have been large trees in the time of

Evelyn, as they are mentioned by him in conjunction with many other then magnificent examples growing in this demesne. Charming views of the surrounding country are to be obtained in this park, owing to its high situation. A splendid herd of deer lend by their graceful forms a charming addition to the beauties of the scenery.

Turning to the pleasure gardens surrounding the mansion we find much that is of interest. As seen from the engraving the grounds immediately in front of the principal entrance contain a great number of very large Elms. A fine terrace, too, is formed around the mansion in order to harmonise the sloping lawn with the mansion. Bold and skilfully disposed groups of Rhododendrons and choice shrubs form a pleasing foreground to a picture which must be truly lovely in early spring. The large St. John's Wort (*Hypericum calycinum*) is employed to good effect in covering bare and unsightly places underneath the shade of the large trees. Stretching far away from the limits of the front lawn is a valley richly studded with trees, and further still glimpses are to be seen of the towering steeples, &c., of busy London and its noble river. In Evelyn's time scarcely a house was to be seen or even a steeple, as this side of the river was then rich in umbrageous dells and amphitheatres of noble trees.

looks very pretty in spring and summer. Foxgloves are encouraged to grow in abundance, and very charming they look when in flower. Various other good old-fashioned plants are quite at home growing among the shrubs. On the right hand side of the lawn is a noble specimen of the Horse Chestnut. The branches of this tree descend from the main stem or trunk to the ground. These have taken root, and are in their turn forming trees, some of which are of considerable size. It can well be imagined what a noble appearance such an example of this handsome tree presents, with a diameter through the centre of the branches of upwards of 70 feet!

Following a winding grass walk we come to the Rose garden, sheltered on all sides from winds, in which are growing a good selection of Roses. Similar winding grass paths leading through the shrubberies under a canopy of foliage, where giant Aucubas and Rhododendrons are thriving in great luxuriance, now and then opening up to view some new point of attraction and interest, and rendering it a delightful promenade, especially when I saw it during the fierce heat of August last. Spring flowers come up in abundance in this sylvan garden. The margins of the shrubberies are planted with various herbaceous plants, such as Phloxes



FIG. 2.—CHARLTON HOUSE.

But things are altered since then—thousands of houses are now nestling for miles round at the foot of the hill. Moving to the western front we have a view of a thousand natural beauties in the shape of picturesque scenery—richly wooded hills and dales. The hand of man has not as yet ruthlessly destroyed the character of its scenery. In the formation of the lawn facing this front no attempt was made to introduce meaningless walks. Nature has been consulted to a great extent, thereby avoiding much of the formalism so conspicuous in the design of many gardens. A bold and free style has been adopted here. The lawn stretches away boldly for a considerable distance, and is separated from the park by a ha-ha. The splendid avenue of Elms previously mentioned commences at the end of the lawn. Bold and sweeping belts of hardy shrubs and trees flank each side of the lawn. The margins of these belts are enlivened in summer by masses of bright showy bedding plants, which render them very attractive. Winding walks occur through the interior of these belts, which are here and there of considerable dimensions. In one of these there is a splendid avenue of ancient Yews, which are supposed to have been in existence long before the present mansion was built. Evelyn also mentions in his "Sylva" of a fine row of the evergreen Cypress then growing there, but all have disappeared save a solitary specimen. A very large trunk of *Robinia Pseud-Acacia* stands in the shrubbery, having lost its branches in the last century. The late Sir Thomas Wilson caused a plant of the Traveller's Joy Clematis to be planted against the trunk of this tree, which has almost covered it, and

Funkias, Monkshood, *Statice cordifolia*, and many others. We must not omit to mention the "Lime Tree Walk," on each side of which are some fine Lime trees, also a very fine specimen of the Judas Tree. The late Sir Thomas, as a botanist and true lover of gardening, made many improvements in the pleasure ground as well as planting many beautiful trees. Retracing our steps, we arrive at the southern end of the mansion and pass through an ancient gateway into a small enclosure surrounded on all sides by an old wall; this is called the Dutch flower garden. This is, in fact, the only flower garden existing here in the ordinary sense of the term, as the beautiful lawns are not deprived of their boldness and extensiveness by being cut up into formal beds. In this enclosure, then, we found beds of *Gaillardia grandiflora*, *Phlox Drummondii*, Chinese Pinks, Violas, and other showy annuals. I was particularly struck with the bed of *Gaillardias*, these making a most effective display. Mr. E. Gilbert (the courteous gardener and steward) states that he raises his stock every year from cuttings in precisely the same way as bedding *Calceolarias* are done. An old Fig tree is growing rampantly against one of the walls, as also are Easter Beurré and Duchesse d'Angouleme Pears, trained horizontally. Leading out of this garden is a small kitchen garden and reserve ground. The old-fashioned herbaceous borders occur around the walks. In these are growing large clumps of the old White Pink and other useful plants for affording cut flowers. In the reserve borders are seed beds of a splendid strain of *Pentstemons* in flower, also Hollyhocks, Campanulas, and other

florists' flowers, which are being raised to plant in the borders of the pleasure garden.

The large kitchen garden is situated in an open position at some distance from the other part of the gardens. The staple soil is of excellent quality, being admirably adapted to the growth of first-class vegetables and fruit. Some exceptionally fine bushes of Alfriston and Blenheim Pippin Apple trees are growing here. The usual bush fruits, too, are grown on a large scale. Excellent crops of vegetables were growing in their various quarters. A slight disadvantage with regard to the production of hardy fruits is the absence of a wall round the kitchen garden. Mr. Gilbert, however, manages to get a fair supply by planting against the walls of various buildings. A couple of Pear trees growing against a portion of the mansion are worthy of mention. These are trained horizontally, and have attained a height of fully 50 feet—the height of the mansion. Mr. Gilbert does not know the name of the variety, but says that thirty years ago they were as large as they are now.

The glass department is not very extensive, neither is it of modern construction. It is, however, none the less useful, as Mr. Gilbert makes good use of it. There is an immense large plant stove, in which are large specimens of *Phoenix reclinata*, *Hibiscus Cooperi*, and the curious *Xylophylla falcata*. Mr. Gilbert is specially successful in the cultivation of *Eucharis amazonica*. He has some splendid specimens, one of which we measured and found to be 6 feet in diameter. The foliage is remarkably robust, enabling each specimen to carry hundreds of blooms. The latter attributes his success to deep potting, disturbing the roots as little as possible, and adopting rational treatment in supplying them with a fair amount of water, and not drying off the plants, as some do, to ensure their blooming. A fine plant of the old and but seldom seen Night-flowering Cactus (*Cereus grandiflorus*) was climbing at will up the roof. Orchids are gone into on a small scale—a specially fine piece of *Phalænopsis Schilleriana* being grown in a basket and suspended over a tank of warm water—a position it evidently enjoys. *Adiantum farleyense* does well there. It is planted out in pockets against the surface of the back wall. It is evidently a good plant for the purpose. In addition to the plants just mentioned there is the usual collection of flowering and foliage plants. A long span-roof stove in which are a miscellaneous collection of Tea Roses, Gardenias, *Stephanotis*, and other plants for affording cut flowers, and a couple of vineries, in which average crops of well-coloured Black Hamburgh Grapes are produced, also containing a healthy collection of Azaleas and Camellias for cut flower purposes, brings the description of the several departments to a close.

Great credit is due to Mr. Gilbert, who has served thirty years in the several capacities of garden boy, journeyman, foreman, head gardener, and eventually steward to past and present baronets in these gardens, for the excellent manner in which he manages not only the gardens, but the other departments of which he has the trusted charge. Mr. Gilbert has served in other good gardens besides these, as well as when serving here as garden boy, having the benefit of acquiring a sound knowledge of the higher principles of gardening under Sir Thomas Wilson's tuition—heuce his wide practical experience and success in his profession.—T. H. S.

WINTER DRESSING FRUIT TREES.

ROOT-PRUNING.

(Continued from page 547 last Vol.)

ROOTS.—When the trees make too much growth and are difficult to restrain by summer pruning, the cropping not being satisfactory, it is evident the roots are in a similar condition to the growths, and we must do one of two things—viz., allow free extension of the growths, limiting the pruning to removing irregularities, so as to preserve the symmetry of the tree, or have the supply of food diminished by curtailing the roots. The former is in many instances impracticable, from the space being limited to a given area, and it becomes a necessity to operate upon the roots; indeed root-pruning in the case of trees on the restricted system is an essential to success. In order to secure crops of fine fruit, large in size and high in quality, the soil must be rich, and we have only to miss a crop of fruit by frost or the inclemency of the weather when the trees grow too luxuriantly to bear profitably. Summer pruning may render the trees symmetrical, and to some extent may check root-action, counteracting the tendency to gross and unripened growths; but it will not change grossness to fertility. It is a case for root-pruning. Then we have occasionally to face gross growth and unfruitfulness, which may be a consequence of too rich soil or its loose and moisture-holding nature. This also is a case for root-pruning, for we have only to get a tree into a fruitful state and by regulating the crop continue it, at least for some time.

In seeking to check over-luxuriance and induce fruitfulness, the danger is in giving too sudden a check, and so cripple the growth that the trees have scarcely life enough left to form fruit buds. The roots should be laid bare, beginning about a yard from the stem in the case of wall trees, and for bushes or pyramids one-third the height of the trees from the stem, working outwards, removing the soil from amongst the roots. Then commence operations by going back to where the soil were first commenced being removed, and select any thick roots that extend without throwing out ramifications or fibres. These should be detached, or some of them, always selecting the thick bare ones that have a tendency to strike downwards. All roots severed should be removed from the soil, so far as that can be done without interfering with the smaller and more fibrous roots. As to the number of roots that ought to be removed, that is matter for the discretion of the operator, for as a rule the more vigorous

the tree the fewer and stronger will be its roots, and these must not be cut so extensively as when the roots are more numerous and more branched.

In most instances of undue vigour the roots will be found deep in the soil, hence advantage should be taken where there are few roots in the space where the soil is taken out to work under them towards the stem, so as to reach and sever every root striking perpendicularly into the soil. When these operations are completed the soil should be returned and made firm about the roots, being careful to fill all the interstices, and if the roots retained are deep lay them in nearer the surface, but in layers with soil between, and this may be continued up to the stem of the trees.

As regards trees that are grown on the restricted system, lifting being resorted to biennially or triennially, the object is to keep the roots home within reach of the manurial elements supplied, and to multiply them as much as possible in that area, for it must be borne in mind that root-pruning and lifting multiplied the roots just as stopping increased the number of shoots. Lifting is an invigorating process, and if judiciously performed is attended with the best results. Lifting must not be practised on trees that have been allowed to have their roots run freely in an unrestricted border. If such trees are operated on it must be done gradually, for if the roots are brought home all at once it is likely the check will be so violent as to seriously interfere with the growth, if indeed the trees do not collapse. The roots must be shortened in this case and fresh ones encouraged from near the base of the stem.

The best time to lift trees is in autumn, as soon as the foliage commences to ripen, but it may safely be performed any time in mild weather during the season of rest up to the swelling of the buds.

GROWTH.—In the case of restricted trees the growths consequent on summer pruning or repeated stopping become very much branched and crowded. In order to admit light and air the spurs should be thinned and shortened so as to bring the growths nearer the wall. The spurs that are very much crowded may be reduced a third, and care should be exercised so as to leave sufficient fruit buds for a crop, removing the attenuated and soft wood growth. Trees that are very full of growth and weakly, forming plenty of fruit buds, are all the better for a judicious thinning. The food supplied will then be appropriated by fewer parts, the blossom will be stronger, the fruit need less thinning, finer fruit and a heavier crop resulting. It is one way of invigorating weakly trees well worth more attention.

There are trees confined to space on walls that produce a quantity of breastwood, and are difficult to restrain either by summer pruning or to bring into a fruitful condition by root-pruning. The fact is they are too restricted, and have not space for the development of new and fruitful parts. If we remove some of the branches to an advantageous place short at the base and train the resulting growth in the place of the old barren one, we obtain a fruitful branch in the course of two or three years. In this way trees that produce little fruit, but plenty of spray, may be rendered fruitful, and being done by degrees will not entail any loss of crop.

Orchard trees that give loads of small fruit usually have the growths much crowded. They should have the heads well thinned so as to let light into the interior, and the result will be freer growth and finer fruit, but so long as a standard tree bears fine fruits its growth should be left alone, the pruning saw only being necessary to lop off straggling growths, to remove cross branches and decayed parts. If the trees do not bear, if they are not healthy, or the fruit is inferior, cut off their heads and regraft them with varieties that have been proved.—G. ABBEY.

(To be continued.)

SUCCESSFUL CHRYSANTHEMUM CULTURE.

IT has been frequently stated in these columns that all the best Chrysanthemum blooms do not find their way to the show tables, and that this is perfectly true will be admitted by all who saw the Chrysanthemums grown this year by Mr. Edwards, gardener at Springfield, Westbury-on-Trym, near Bristol. The collection would not, as the times are, be thought an extensive one, neither is a very great variety aimed at; but all were very well grown, the blooms being remarkable both for their great size and substance. Plenty of the blooms of Japanese sorts measured from 8 inches to 11 inches across, though what Mr. Edwards rightly considered the best were of less diameter in most cases, but more than compensated for this falling-off in that they were of greater depth and substance. Some of the best blooms of Elaine were $6\frac{1}{4}$ inches across, Lady Selborne $6\frac{1}{2}$ inches, Cry Kang $7\frac{1}{2}$ inches, Cossack $6\frac{3}{4}$ inches, Comte de Germiny $8\frac{1}{2}$ inches, and Madame C. Audiguier $8\frac{1}{2}$ inches, the last-mentioned being $6\frac{1}{2}$ inches in depth, and were truly grand specimens. The measurements of some of the incurved sorts were as follows:—Golden Queen of England $7\frac{3}{4}$ inches across, Queen of England 7 inches, Nil Desperandum $5\frac{1}{2}$ inches, Prince of Wales 5 inches, Mrs. Heale $5\frac{1}{2}$ inches, Mrs. Halliburton $4\frac{3}{4}$ inches, Jardin des Plantes $5\frac{1}{4}$ inches, Bronze Jardin des Plantes $5\frac{1}{2}$ inches, St. Patrick $4\frac{3}{4}$, and Lilac Venus $4\frac{3}{4}$ inches, and were in other respects perfect blooms.

The plants are not stopped or cut down in any way, and Mr. Edwards much prefers the crown buds, as these, if secured, invariably develop into blooms of greater substance than do the majority of the terminal buds. The number of blooms to a plant varied according to the vigour and habit of the variety; but as fine blooms were desired care was taken not to grow too many. In this and other respects Mr. Edwards' treatment does not materially differ from that of the majority of growers of large blooms, but his ideas as to the possibility of giving liquid manures

too strongly, and also that high culture shortens the duration of the display, are worthy of repeating.

At no time does he use strong liquid manure, nor does he confine himself to one particular kind. Sometimes it is soot water, at others guano water, varied with drainings from the manure heap, and, as he says, "always very weak, being of opinion that a deal of injury is caused by giving stimulants too strong." A fortnight before the plants are housed, this usually taking place about October 10th, each plant receives a sprinkling of Standen's manure, and "after that nothing but clear water, and always as near the temperature of the house as possible." Yet in spite of this moderation Mr. Edwards complains that his blooms are over long before those under the charge of a neighbouring gardener, and who uses nothing but clear water. Unless I am much mistaken others, too, have made the same discovery. At any rate, with us the conservatory plants, and especially the hybrid Pompons, notably Scour Melanie and several Anemone-flowered varieties, last much longer than do the disbudded and much-pampered larger-flowering varieties. However, the large blooms afford much pleasure while they last, and we must be thankful accordingly.—W. I.

THE PERILS OF ORCHID COLLECTORS.

THE following letter from Dr. Alexander Wallace of Colchester recently appeared in the *Standard*, and it so well portrays the difficulties and dangers encountered by plant-collectors that it is worthy of reproduction.

"I send you particulars of a trip to New Guinea which I received from my botanical collector, and which resemble so strongly an account given in the *Australasian Times* that I am tempted to believe they relate to the same expedition. If so, as the tale I now send was furnished me direct by the collector who was present throughout, the details of it are probably more correct than those of the extract in question. The following is the letter:—

"That was an awful failure—we had to escape for our lives. We were in great hopes when we got there, as we found several new rivers. We were six in all, and had a little schooner for exploring. We went up a very large river one to two miles wide; the Captain would not let us land, as he wished to explore the river first. This main river turned out to be an estuary, though not known before. From it we went up a new river, which was called the Syme, for many miles, passing several mouths of other rivers, all new to white men, and which were duly named. We were anxiously looking out for natives or their villages, but saw none. All the way up for miles this Syme was affected by the tides, but when receding we had to use all our strength to fight against the powerful current to get upwards. The naturalist and I were often anxious to get on shore, but no; our Captain wanted to get to the top of the river, or as far as we could, and then return and begin land exploration. We went up many miles until the current was so strong that we could not get any further. We could see the banks of the river were clothed with lofty trees, Palms, and in many instances Ferns of large dimensions.

"On our return down the river towards the mouth of the sea, where we intended to begin exploring inland, we met with, or rather saw, a sight that made us shudder—a large number of canoes crammed full of natives—cannibals. These wretches live further round the coast, and make periodical trips down the coast to the more harmless natives, and clear them out, killing all before them. They are called the Dugarra men. They have decimated the coast tribes almost to a man. In some instances they take them back and kill and eat them. Here was a dilemma, and the force of the current was fast taking us into their midst. We, however, managed to get our little schooner to the windward and set sail, at the same time assisting her with all our power with the dingy we had. Night was coming on, so that we managed to escape through the darkness. The next thing was, what to do. Our Captain was sick, he had been unwell for some days; at last, as a ruse, we set all sails on the schooner for up the river and abandoned her, getting into the dingy and rowing to the side of the river. Having done this we sank the dingy in the mangroves that grow fearfully thick. We hoped they would follow our schooner, and we should escape. We had to leave all behind except a few odds and ends we could hurriedly get—a little medicine, our guns, and some oatmeal and a few biscuits. We thus started off for the coast, to find it through swamps and mangroves, every moment expecting the cannibal wretches at our feet. On we went, and at last, weary, made a bed on the ground where best we could. In the morning we found ourselves on the edge of a large flat of cold grey soil covered with Pitcher Plants; but on we went. Then we came to a large creek or river; had to get through as best we could—the blazing tropical sun overhead, the miasmatic steam from the swamps enveloping us. Some of us began to feel a touch of the fever; one got light-headed for a while. We continued for three or four days at this game, and nothing to eat but dry oatmeal.

"One morning we were crossing a native hunting ground, and presently, without warning, a spear came whizzing through the air and struck one of our men in the foot, going clean through boot and foot. We thought our end had come, and determined to die desperately, but the natives decamped as quickly as we made up our minds to fight it out, for we could not find one. On we went, and reached the coast at last. Mangrove swamps and Mangrove swamps, and low stunted Eucalyptus. Opposite to us there was an island at which we called on our way to New Guinea, called Sabai. This island two or three years before had been decimated by these cannibals, and only about a hundred souls escaped. The next year they came the Sabai natives, with their teachers, went out in whaleboats and met them, and gave them an awful thrashing, killing most of them, leaving few to go home to tell the tale. Those wretches we met in the mouth of the river were the men that were going to Sabai to wreak their vengeance; luckily for Sabai we met with them first. Well, we wanted to get to this island, some three miles across. At this time we were all in a queer state; the Captain was very ill; Kelly, who had had his foot speared, was in great agony of pain. One of our party, Scott, wanted to swim over for help from Sabai, and at last, by great persuasion, we constructed a raft and let him

go. We saw him go bravely on through the reefs, which are very dangerous all round this coast, and, in fact, Torres Straits are full of these dangerous coral reefs; we watched and watched him out of sight, hoping he would get safe. We waited a day, fully expecting someone coming to our succour, but no, not a sign of life; we were in the most fearful dread, as we knew by that time that they, the cannibals, had overhauled our little craft, and would be terribly enraged at finding we were off. At last, as an expedient, I proposed a fire, though others were afraid it might attract the Dugarra men. However, our mates were so bad, it was, as I argued, better even do it to attract Sabai and the other wretches than die of fear, sickness, and hunger. Our fire had the desired effect—they were soon down for us from Sabai, and we got safely off at last.

"I had a few bits of Orchids and a beautiful Impatiens; but, alas! they were all forgotten; but, do you know, the craze for Orchids was so strong that I could almost have gone back for them. We, however, warned the teachers of the Dugarra men. Poor Scott never turned up and was lost—drowned. This cast a terrible gloom over us all. A pearl-fishing schooner was there. They bundled us off, as they were all up and making ready again to meet those wretches out in the sea to do battle, and we were in their way. We were glad to get away. We were all prostrate; the Captain was very ill; his legs, with going through the swamp, got diseased, and we had to leave Kelly and him at Cooktown. Stewart and myself were the best of the lot. I suppose I stood it well, being so used to steaming-houses. Thus ended the trip, such a one that I shall never undertake again. Whenever I go again I shall make for Port Moresby, and get the assistance of the missionaries. I may say that we had but small opportunity to get anything. The naturalist, Stewart, got a few fine insects and a few birds on one or two stolen trips on the land. I got several things, a grand Croton or two, some Orchids, Dendrobes, a grand Pitcher Plant, and a few other things; but, alas! they were left in the schooner for the cannibals. We have since heard that they tore our vessel in pieces, and took away stores, &c. The naturalist wished they would eat his arsenical soap, and that would be a mild revenge."

ANTIRRHINUMS AGAIN.

I AM never without a bed of those most hardy, useful, and very ornamental flowers. The dwarf varieties are specially suited for small gardens, the colours ranging from the richest velvet crimson to the most delicate flesh, the purest whites and the clearest palest yellows. They bloom in early summer most profusely. No seedpod is suffered to remain. Each one may calculate on a constant succession, not of course a blaze like the first bloom, but you will never be disappointed of spikes till severe frosts set in. A bed will last two or even three years. The taller varieties of Antirrhinums are striking and effective for decorative purposes. One or two spikes, with an Ox-eyed Daisy or two, and a few field grasses make a simple and graceful arrangement in a tall slender or trumpet-shaped glass.—A. M. B.

TEA ROSES UNDER GLASS—PRUNING.

I WISH you would in an early issue of the *Journal* give an article on Tea Roses planted out under glass. I have a house planted with them, but I do not exactly understand the pruning of them as described by most growers. Some of them have made shoots 2 or 3 feet long and branched at the top, almost like a standard. Again some vigorous growers, like Gloire de Dijon, &c., have made shoots from 9 to 12 feet long, and then branched all the way up the stem, and then again these lateral branches in some instances have branched again.—JAMES PERCIVAL.

BEFORE these varieties can be pruned to yield the most satisfactory return to the grower they must be divided into two classes. The system of pruning that would suit the smaller-growing varieties, such as Niphetos, Rubens, Madame Lambard, Souvenir d'un Ami, and others, would not answer for Gloire de Dijon, Lamarque, Maréchal Niel, and such varieties that produce long strong vigorous growths. With the former pruning must be regulated chiefly upon the system of training adopted, and whether large flowers of first-rate quality are required in preference to a larger number of smaller buds. I will detail the system of pruning necessary in each case as well as for the two classes into which I propose dividing the varieties alluded to above.

The former or small-growing varieties, if planted against pillars to cover an arched trellis or the front of the roof in a partially upright condition, are easily pruned when large numbers of buds are desired. The small, weak, and puny shoots should be removed or shortened to one eye, while all unripe and soft wood should be cut back to firm wood. If the plants have been previously trained—especially to an arched or similar trellis—some of the wood previously laid in will be useless and should be removed. It will be seen at a glance which wood has been weakened by strong vigorous shoots starting from its base. This wood, if not already showing signs of going back, would not be long before it died if laid in again. Our practice is to remove at pruning time the whole of the wood that was laid in the previous year to the point where strong new shoots have started. When the trellis has once been filled with sufficient leading shoots pruning is easy, because the whole of the old exhausted wood can be removed annually, and the best of the current year's wood retained for refilling the trellis, or at the least the best and most

ripened, so that sufficient can be laid in without unduly crowding it. When grown to a pillar or on an upright trellis the operation is a little more difficult in order to keep the base well furnished, for they grow most luxuriantly at the top, and become crowded at the expense of the base. This is especially so on the former, and all strong shoots from the base must be preserved and occasionally cut back hard to induce them to produce others. The top should be kept well thinned, and in preference to taking a piece out at intervals it is better to cut one or two strong shoots that lead to the top close back to the base, when they will break again strongly.

When trained upright at the front of a house the strongest shoots that are taking the lead can be laid out horizontally or brought into a lower position, while the weaker wood can be trained upright. This induces the strong wood to break into growth freely and keeps the bottom furnished. Pruning in other respects should be done the same as advised for the arched trellis, weak wood being removed or spurred, unripe wood shortened back, as well as any other shoots that are likely to crowd the trellis when they are tied in. In thinning some judgment must be exercised to remove badly placed shoots and lay in as far as practicable those starting from near the root, by which means only can the base of the plants be kept regularly furnished. When grown as bushes the same system of pruning should be adopted, removing useless wood and shortening unripe growths. Strong shoots that spring from the base should be retained nearly their whole length, and pegged or tied as much in a horizontal position as possible to induce others to start freely from their base. This I have found preferable to hard pruning back. The favourite plan with us is to secure such shoots to three or four small stakes placed round the plants.

From the moderate system of pruning recommended I have always been able to obtain the greatest quantity of buds suitable for cutting for decorative purposes. When large blooms are preferred to number the pruning must be more severely performed. On whichever system the plants are grown they must be well cut back to induce the formation of vigorous growth, which will be found to produce the largest and finest flowers. If the plants are on their own roots, or have rooted freely from the union of the stock and Rose, hard pruning will induce shoots to be produced freely from the base. When the plants are pruned severely there are fewer shoots about them, as quantities of wood are removed that would produce useful buds. The shoots from such plants, especially early in the season, are naturally stronger and more luxuriant than can possibly be the case when more than double the number is left.

The larger-growing varieties, such as Gloire de Dijon, do not require much pruning until after they have flowered. In whatever position they may be trained weak shoots and unripe ends only are removed. Such growths as your correspondent describes have the laterals shortened to firm wood, and if there were room the whole of them would be laid in; if not, the firmest only would be selected—say every alternate or every second on each side of the shoot, the remainder being shortened back to two or three eyes. Sub-laterals, or those that have been produced from side shoots, are also treated in the same way and tied to the trellis if ripe and room could be found for them; if not, they would be spurred to one or two eyes according to their ripeness. With the exception of unripe ends the shoots of these varieties should be laid in their full length if room can be found for them. It may be mentioned that if the plants are trained upright under the roof, the more horizontally the shoots are placed the better will they break from every bud along the shoots, and if well ripened nearly every one will produce a flower. After flowering and young shoots are found issuing freely from the base of the wood that has flowered the operation of pruning these varieties should be completed. The flowering shoots should be removed to the point where young shoots are springing from them, leaving sufficient to again cover the trellis or space devoted to them. When leaders are laid in to cover the upper portion of a trellis they may be left nearly their entire length, but sufficiently far apart to allow room for side shoots and those from nearer the base being laid in freely. It may be mentioned that it is a good plan to prevent in these strong-growing varieties the production of second lateral growths as far as practicable, for very rarely do they ripen sufficiently to flower satisfactorily. Not only so, but they prevent to a large extent the main shoots from flowering as well as they otherwise would do. This is prevented by allowing the shoots to grow as much in an upright direction as possible, with care not to injure the point of the leaders.—W. B.

CLIANTHUS DAMPIERI.

THIS lovely plant when well grown cannot fail to be highly appreciated. Although long known in this country I fear few good specimens are to be found. This is without doubt owing to the difficulty of its culture. I have seen many endeavour to grow them, but their attempts have ended in failure. Where, however, plants are cultivated for their peculiarity or beauty this Glory Pea should not be omitted, as it is very striking in appearance.

Seeds germinate freely, and there is no difficulty in this stage, but when the time comes for repotting the difficulty commences. Although it is a free-rooting plant, yet to injure a root will be almost certain death. To prevent this as much as possible the seed pots should not be drained in the ordinary way, but simply have a rough piece of fibry turf at the bottom, as the roots will cling to this, and will move with greater safety than when crocks are used, as they invariably fall off, bringing more or less of the roots with them. They should be placed in the pots in which they are to flower before the roots are matted or through the hole at the bottom. The pots must be well drained, as they are very liable to damp off. The soil best suited to them is peat, loam, and sand, which should be used in a rough state broken by the hand. They should be placed in a warm house for a few days after potting, and water very sparingly. When the roots have taken to the new soil they should be placed where they can be fully exposed to sun and air. Although perennial in habit it often assumes a biennial character, not unusually dying off after flowering. I like to sow the seeds in February, as plants will thus be produced that will flower at the end of summer.—A. ANDERSON.

CHOICE ALPINE PLANTS.

PAROCHÆTUS COMMUNIS.—Judging by its specific name this at some period, or perhaps in its native home, was abundant; this, however, is not the case in English gardens now. There is no plant more charming for the rock garden than this at all times when in flower. It commences flowering in July, from which time I have known it to continue producing flowers to the end of October. At so late a date it is doubly valuable, since the numbers of outdoor flowering plants are becoming conspicuous by their absence, and when we can gather a few bunches of its pretty porcelain blue flowers at this season we are apt to regard it at its full worth. It is of trailing habit and somewhat wiry growth, and besides being so good a rock plant, it makes an excellent plant for baskets, where its flowers may be seen to advantage overhanging the sides. It has long been an inhabitant of our gardens, having come from Nepal in the early part of the present century. It is quite hardy, though I prefer to give it frame protection during winter. It delights in somewhat strong and sandy loam, in rather sunny positions, kept fairly moist in the growing season, and is propagated by seeds and by division. In short, it is one of those charming plants of blue that lighten the rock garden at any season of the year, of a colour, too, that associates well with others, and which, unfortunately, is not sufficiently common.

PETROCALLIS PYRENAICA.—One of the choicest and at the same time most difficult to manage of alpine plants. To see it in its mountain home snugly nestling among the rocks, or as a cushion on some projecting ledge, it has a somewhat singular appearance. It requires all the abilities of the experienced grower of alpine plants to succeed with it, and it is rarely seen in good condition. There is no real need for such a state of things as this, seeing that it inhabits a wide geographical area—*i.e.*, in various parts of southern Europe, the Tyrol, northern Italy, besides the locality which is signified in its specific name, and from each of these it may be collected somewhat plentifully, not only in plants, but seeds can be had in due course. The latter, however, will need great care, as they are exceedingly minute, and when sown should be barely covered, the best plan being to scatter lightly some silver sand over them, covering them with a sheet of darkened glass. This must be removed when signs of life appear, for never were good healthy plants grown for any time in a glass structure, indeed it is often ruined—sent into a rapid decline, so to speak, by being placed under glass. It is perfectly hardy, and delights in a free pure atmosphere. The choice rock garden is the place for it under cultivation, choosing a sunny spot at all times. The soil it delights in is sandy loam, with about one-sixth part of fibrous peat, to which add an abundance of small stones or broken bricks. It delights in having its roots against the side of a stone which is invariably moist and cool, and it must never suffer from drought. It forms fresh light green cushions of thrice-divided leaves, about an inch high, and covered with its delicate lilac purple-shaded flowers, which emit a faint odour. The general appearance of this plant bears some resemblance to the tufted Saxifragas. It is a most pleasing alpine, and may be increased by division when the plants are sufficiently large. This should be done in early autumn, thus giving a chance for the plants to re-establish themselves before winter, taking care to plant firmly. Care must at all times be exercised in dealing with it, and those unacquainted with its requirements will do well to take a lesson from more experienced persons.

DAPHNE RUPESTRIS.—This little Rock Daphne is a beautiful alpine, and forms a neat diminutive bush about 2 inches high, spreading when well established into dense compact tufts or carpets, and covered with a perfect mass of its deliciously fragrant blossoms as to almost hide its shining, fleshy, and somewhat spoon-shaped leaves. It surpasses in general excellence the well-known sweet-scented trailing Daphne, *D. Cneorum*, but at present it is very rare and only occasionally met with. Its flowers are of soft rose colour, and individually are much larger than those of *D. Cneorum*, which, considering the size of the plants under notice, is saying a good deal. In point of fragrance it equals the ever-welcome *D. indica*, so that it is only fair to assume that in it we have an alpine which can vie with the rarest of the rare. It is not an easy matter to describe the ecstasies of delight the alpine lover will occasionally indulge in when some new or rare gem is seen in perfect condition, and I well remember my feelings when I first made its acquaintance. Its clustered heads of deliciously fragrant flowers, together with its pigmy innocence, seemed without a rival. Though small, it is of considerable import, and the powerful fragrance emitted from large patches will never be forgotten.

It is perfectly hardy and essentially a rock plant, inhabiting in a wild state limestone fissures in peaty loam. Under cultivation it succeeds admirably in about equal parts of loam and peat, and notwithstanding its fondness for limestone in its wild state, it does not seem to suffer by its absence, since it grows well without it. Still there are so great a variety of ways by which lime in some form or other may be given it, that there is no reason why it should not have it—*e.g.*, it may be supplied in the shape of old mortar rubbish, a very useful thing where alpiners are abundant, and in fact valuable. Whether planted out on the rockery or grown in pots or pans it should be kept fairly moist, and must always be firmly planted. It comes from New Zealand and is of recent introduction.

LYCHNIS LAGASCÆ.—A lovely little profuse-flowering alpine, known also by the generic synonym of *Petrocoptis*, but seeing that the first name is the more easily remembered, we will give it preference here. No rockery need be without this, for it seeds as free as *Saponaria ozymoides*, and grows with remarkable freedom when favourably situated. Unlike the *Saponaria*, it prefers the lower portion of the rock, a position somewhat moist, though quite free and exposed. We have no other alpine *Lychnis* that can compare with this, and which is so well suited for associating with even the choicest and smallest of alpiners. It is of dwarf spreading habit, slightly brittle or stiff-jointed, the leaves assuming a glaucous tint, and is peculiarly adapted for planting here and there on the rock in small patches, for nothing is more lovely than its bright rose-coloured flowers, which are produced during the summer and early autumn. It is of easy culture and succeeds well in any ordinary sandy loam, flowering at times with a freedom which has not unfrequently caused its death, and unless the seed is required it is best to clip over the plants annually after flowering. When well grown its rose-coloured flowers should be three-quarters of an inch across, and to see a few patches studded with them renders it a most useful and telling rock plant. It may be also increased by cuttings. Seeds, however, are simplest and produce the best results; besides which there is always the possibility of obtaining improved forms in raising plants from seeds, though one cannot hope for much improvement in regard to this charming *Lychnis*, indeed it is hardly desirable. To the late Mr. R. C. Niven we owe its introduction, by whom it was brought some years ago from the North-Western Pyrenees. It is most impatient of being lifted and transplanted, old plants especially so, and seedlings are best potted singly when fit to handle, and from these transferred to their permanent quarters as required.—J. H. E.

SPIRÆAS PALMATA AND JAPONICA.

THESE are amongst the best winter and spring flowering plants. Their culture is most simple throughout the summer, and their blooming is always certain. The pink *S. palmata* does not force so readily as the white *S. japonica* very early in the season, but both should be grown, and if not introduced to heat at the same time *S. palmata* will be found to be a charming plant about the month of March. The white-flowered species is better known, and it cannot be grown in too many instances, as its pure graceful heads of bloom are of the utmost value in all kinds of cut flower arrangements. With a dozen or two of sprays of this and a few heads of scarlet *Pelargonium*s we would never be afraid of failing to have our dinner table elegantly decorated in the dullest winter or spring days. With well-ripened roots and crowns to deal with the early flowers may be open by the end of January, and then a succession may follow.

We do not start our plants under ashes or any covering as is sometimes done, but they are introduced to the forcing quarters from the open air or the frames. The strongest are taken in first and remain for a week or ten days in a structure heated to about 55°, and as soon as they commence appearing they are placed in more heat, or a temperature of from 65° to 70°. There they push on rapidly, and as the leaves and flower buds appear abundance of water is given at the roots, but no syringing is done. They are kept near the glass, and care is taken that they do not receive a check when in this condition, as a sudden chill or draught of cold wind, or shifting out of a warm place to a cool one, will cause the flower stems to wither. This is more likely to happen with *S. palmata* than *S. japonica*. When the flowers have opened they do not suffer so readily, and may be placed in any greenhouse or conservatory, where they will remain fresh for several weeks. We have tried to have them in bloom at Christmas, but have never succeeded to our satisfaction. We, however, begin forcing them now, and find no difficulty in blooming them in February and onwards. Very good crowns of foreign growth may be had from seedsmen, but everybody may soon get a stock of their own, and when well grown those cultivated and matured at home will force as readily and bloom more freely than any which can be bought.—M. J.

EXHIBITION ROSES AND TRIMMING.

WHEN the Leek Rose Society published the opinions of various Rose exhibitors as to the case of gumming Roses detected at their exhibition, a friend of mine wrote me on some other subject, and his P.S. ran thus:—"Mrs. — is very fond of gumming her Roses, and does not quite agree with you about the practice." By all means, and as much as any lady pleases for her own pleasure. It were indeed pardonable, especially with those who have not many Roses, to adopt any manœuvres which might prolong their glories and render their decorative life a shade longer. But in this case the cement is to increase or prolong the glory of the flower for home adornment, not to add to the glory of an exhibitor and win for him under false pretences a coveted medal or cup. The two cases are widely different. Where nothing is to be gained but the increased pleasure of individuals in admiring for a longer season the

beauties of a flower, any artifices are legitimate. Nay, I will go further. Wherever a stand was exhibited "not for competition," I would allow the exhibitor any vagaries that suited his taste, although I see, even in this, conditions that might favour the pocket of the exhibitor; these, however, are conditions comparatively trivial. The great point that I think holds against all unfair tampering with flowers in the exhibition tent for prizes is, that the straightforward and honest exhibitor is placed at a great disadvantage and most heavily and unfairly handicapped. The young and honest exhibitor is doubly so, because in all probability he has had no opportunity of yet learning how to display his blooms to the best advantage. In this respect I have a very lively recollection of my own first attempt at a dozen trusses and the beautiful strewing of petals that were visible at the end of the journey! The way of setting up successfully, the proper time for cutting and stage of bloom at which that cutting should take place, are certain to haffle in some degree the youthful aspirant for rosy honours. How can he fare if as well he has to defeat the trickeries of exhibition as well?

Thanks to the conformation of the queen of flowers, the petals cannot be moved about as those of some of the Composite flowers are, and only very rarely perhaps, would slight shifting or pulling improve a



Fig. 3.—*Boronia rutosma*.

bloom. It seems to me that "dressing" can only be of use where a flower will preserve the position in which it is placed for some days, as in the *Dahlia*, *Picotée*, *Aster*, and *Chrysanthemum*s. The *Rose*, on the contrary, is often growing whilst under the eye of the judges, and therefore ordinary "dressing" will not, I fancy, apply to it. All the better for *Rose* exhibitors, say I.

Thus far our last week's *Journal* reached me, and with it the rules passed at the meeting of the National *Rose* Society. Rule 8, if strictly enforced, ought to be sufficiently powerful and clear to meet any case of tailoring, whether this be in the form of stitching the petals together and thus preventing eye-opening, or "gumming," which was undoubtedly in the *Leek* case intended to act in the same way.

Borrowing is, of course, impossible for a judge to detect; almost indeed for anyone. Hence, those who practise it—and I have been in the way of knowing several cases—become dreadfully hardened. I once knew a case where at a spring show a *Rose* exhibitor, who had not an inch of glass, showed a stand of *Roses*, and was awarded first prize; then someone remarked, "Where on earth does he grow them? He has no glass, and there is not a *Rose* in bloom out of doors." Further comments were made, and at last the Committee took the matter up, and intimated to the exhibitor that they were ready to give him the prize money if he would call at their office and formally swear that he had grown all the blooms. The prize was never claimed. Such a case, however, only proves how persons may be led on to act.—Y. B. A. Z.

BORONIA RUTOSMA.

THIS *Boronia* is sometimes seen under the name of *B. spathulata*, but differs from the species so named by Lindley, being more branched in habit and more numerous flowers. It forms a dense bush, and when covered with its bright pink flowers it has a very pretty appearance. Like other members of the genus it succeeds well in a greenhouse, requiring but little care except in providing good drainage, as stagnant moisture about the roots is very injurious. A compost of peat and light turfy loam with sand is suitable, the growth being so strong and compact

that scarcely any pruning is needed at any time. Though not so fragrant as *B. megastigma*, or so showy as some other *Boronias*, *B. rutosma* is still a useful plant well worth attention.

A WORD TO YOUNG HEAD GARDENERS.

I READ with much pleasure the advice given twelve months ago to young gardeners in the *Journal* by your correspondent, "A Working Gardener," and I was pleased on opening the *Journal* last week to see that he is still interested in the welfare of us younger brethren of the craft. I look upon his present paper as a sound and safe guide to all young gardeners. I would that we had more men who would give us such advice. If all young men would take it to heart I feel sure it would be a great help to them in their calling.

I can almost imagine I can hear some young men who are inclined to treat such advice with contempt, or think very light of it, but when it is their lot to be placed at the head of an establishment, whether large or small, and be held responsible for everything concerning their charge, they will then realise the value of such an article.—A YOUNG HEAD GARDENER.

GARDEN WALKS.

THE present is a good time to give garden walks any attention they may require in the way of repairs, &c. Where the walks are low new gravel should be added, or the walks trenched, and some rough material put in the bottom to make up the deficiency. Where the surface is green or dirty, turning the gravel over will work a great improvement. After being turned the gravel should be left for a few days to get a good washing by the rain, then to be trodden down and thoroughly rolled. If weeds or moss are troublesome, and it is not desirable to disturb the gravel, a good dressing of salt will soon cleanse the walks of these and make the gravel look bright and fresh. In applying the salt care must be taken not to place it too near the grass edgings, or the turf may be injured. We leave a space of about 5 or 6 inches on each side of the walks. Some have objected to the use of salt on account of the fertilising power after the first effect has passed away; but if the dressing is sufficient weeds will not establish themselves again for at least a year. This is more than the most careful hand-weeding can secure, and at a much less cost. We have a walk 12 feet wide and over a quarter of a mile long, which at a rough calculation cost about £10 a year to keep clean by hand-weeding. This walk is now kept perfectly clean for as many shillings by an annual dressing of salt. It is best to apply the salt during damp weather, as then it quickly dissolves and does not get washed away.—E. B.

A RUN TO LINCOLN—NOTES BY THE WAY.

THE *Chrysanthemum Shows* occasion many journeys at a season when little of general interest is to be found in most gardens, but even in dull November it is not difficult to obtain subjects worthy of note. Thus, taking advantage of a journey to Lincoln, I had an opportunity of making a few calls by the way, and memories of the principal objects of interest are briefly conveyed in the following jottings.

Starting from Liverpool Street the first call was made at

THE GRAPERIES, BISHOP STORTFORD.

For many years Mr. Ward has held a foremost position amongst the fruit-growers of the present day, and the establishment where he has achieved so many triumphs is therefore invested with an unusual interest. Pine culture was long an important part of Mr. Ward's practice, and those who have seen the handsome fruits he has repeatedly staged at metropolitan and other shows are fully prepared to admit that his success was most praiseworthy. Pine-growing has, however, been in a great measure discontinued, and we now see several ranges of grand vineries containing Vines of equally remarkable strength and bearing fruit of the same admirable quality. The principal ranges are those for early and late Grapes, each about 200 feet long, the former a lean-to and the latter span-roof, about 25 feet wide and well proportioned. Another span-roof house is devoted to Muscat of Alexandria, the Vines of which have this season borne a wonderfully fine crop of richly coloured bunches, the greater portion of which had, however, been cleared off at the time of my visit. In the early house Black Hamburgh is the variety relied upon, while in the late house a general collection is grown, amongst which Gros Colman, Lady Downe's, and Alicante are chief favourites. All the Vines have made surprisingly vigorous growth, for Mr. Ward treats them liberally, though the borders are not nearly so wide as is usual in gardens, but a well-prepared compost and frequent top-dressings amply compensate for any deficiency that might arise from that cause. In preparing the borders the greatest care is bestowed upon the drainage as a point of the utmost importance, and the outfall in the part of the border is contrived so that there is little chance of either soil or roots obtaining entry and thus checking the free passage of the water. The boundary wall has the joints carefully cemented and finished, for in several instances Mr. Ward has found the roots pass through 9-inch walls, and in one case the roots had penetrated an old board placed against the outer surface of the wall, and this in one year's growth. It is in consequence of this well-known root-extending power of the Vine that so much importance is attached to having a boundary wall that will effectually restrain the roots, as without this is done they are not completely under the management of the cultivator, and unsatisfactory results may be occasioned. The late house already mentioned is a magnificent structure, and it would not be easy to find such fine examples of well-finished Grapes as those that hung from

the Vines trained to its roof. Viewed from one end it had a beautiful appearance, the bunches being numerous, well developed, and evenly distributed over the rods. Some of the Vines had been partly relieved of their crop, but the majority would not be cut until some weeks later, when the useful troughs which Mr. Ward has designed would be employed to preserve them until wanted. These troughs have been repeatedly noticed and described, and it need only be added that they are admirably adapted for the purpose, being evidently much superior to the ordinary bottles. They are easily filled or emptied, and can be affixed to a wall with the greatest ease, or in the case of the double troughs a great economy of space is effected by placing them in rows on a wooden frame support, so that bunches can be hung on each side.

Fruit is not, however, the only object of attention, for *Chrysanthemums* are numerous and well grown, chiefly to afford blooms for cutting, and they formed an attractive display in one of the houses. *Eucharises* are also largely grown, and one of the old Vine pits is now being devoted to these valuable plants. But in every house and with each object of attention the same cultural skill is evident as in the vineries.

EASTON LODGE, DUNMOW.

A short run on a branch line towards Chelmsford, and the ancient little town of Dunmow is reached, the name of which is familiar to English ears in connection with the flitch of bacon custom. But for this it is probable the town would have remained in the obscurity which might be expected from its isolated position. In one other respect the neighbourhood of Dunmow is notable, and that is for its quiet but pretty rural scenery. It would be difficult to wax eloquent over the scenery of many parts of Essex, and particularly of these portions nearest to London extending near the Thames to Southend, but in the Dunmow district there is an agreeable undulation of the surface, quite superior to the prevailing flatness elsewhere. This is particularly observable in travelling by road to Easton Lodge, the seat of Lord and Lady Brooke, which is about three miles from the town, and most pleasantly situated, surrounded by a large estate of fertile and well-farmed land. For some distance the public road passes through the extensive and beautiful park, which abounds in remarkable old Oaks, every one of which would form an interesting study for an artist or admirers of arboreal antiquity. Some have suffered sadly in the severe gales of recent years, and shorn of their massive limbs the huge boles stand mementos of past ages. Others still in the pride of mature strength resist the warring elements and rise majestically above their neighbours. Many an hour might be spent in admiring these old giants, which impart so much interest to the landscape and render the park the pride of its noble owners.

The mansion is an unpretentious building, but substantial and commodious, commanding on one side a view of the park, and on the other a pretty prospect of neat homesteads, meadows, and farms, with a graceful church spire forming an additional and important feature in the scene. Upon this side of the house is the principal flower garden, where a good display of the ordinary bedding plants is provided during the summer months; but November was too late to see any of these, though some large beds of Dahlias were still uninjured by frosts, and were bearing abundant blooms. On the left-hand side, looking from the house, is, however, the great feature of the Easton Lodge Gardens—namely, the rosery, which is one of the most extensive that can be seen in any private garden. Over 100 beds of various forms and sizes are filled with strong plants of all the leading varieties, some beds 20 feet or more in diameter being devoted to one variety, while in others a selection is planted. The situation is sheltered by borders of shrubs and trees, but not too much shaded, and the soil being moderately heavy appears to suit the Roses admirably, the result being that with the good attention they receive a vigorous growth is made and handsome blooms are obtained by thousands to meet the home demands. In June and July this Rose garden must be magnificent with its wealth of fragrant flowers, and its proximity to the mansion renders it still more appreciated. A walk leads from this through a shrubbery to a little dell where a pretty rootery and rockery have been recently formed, thus suitably utilising what had previously been one of those waste and neglected corners which are to be found in most gardens. From there the walk passes through the kitchen garden, which is several acres in extent, clean, and thoroughly well cropped, for the demand upon this department is very great, and large supplies of all vegetables are required throughout the year. Free and frequent working of the soil, good dressings of manure, and close intercropping is the system followed with evident success. Fruit trees and bush fruits are numerous, and have this season yielded very fair crops, though not generally so satisfactory as last year, except perhaps in the size of individual fruits, which, in the case of some Apples especially, has been rather remarkable.

Several houses are devoted to Vines, stove and greenhouse plants, but the two best are the stove and conservatory, both pretty houses of more modern construction than the others which have done service for many years. In November the conservatory was particularly gay with *Chrysanthemums*, which the experienced and able gardener, Mr. H. Lister, grows very successfully. Plants of various sizes are employed, so that a fine bank is formed at the back, with smaller plants along the stage in front, while some of the taller plants are trained up the rafters, the heads of flowers being allowed to droop over the path. This is an admirable mode of decorating a conservatory, and is practised in several establishments with most satisfactory results. Many of the large-flowered incurved varieties are seen to excellent advantage in this way, the blooms retain their form better and keep clean and fresh longer. Several plants of White and Golden Empress of India, Queen of England, and others of that type were exceedingly fine, quite up to exhibition standard, as were also most of the smaller incurved varieties. Japanese varieties are largely

and well grown, half a dozen plants of Madame C. Audiguier bearing some of the most handsome blooms I have seen this season, not excepting those exhibited at the National Chrysanthemum Society's Show. Another section of these plants which has come into favour during the past two or three seasons comprises the single and semi-double varieties, and these have received special attention at Easton Lodge, a number of pretty seedlings having been raised. One valuable quality of these is that they are later in flowering than the ordinary sorts, and another is that they last longer, thus considerably extending the period during which flowers can be obtained. By tastefully arranging these a most pleasing effect was produced, which has been greatly admired by many visitors. The stove contains some healthy Ferns, Orchids, and miscellaneous plants, all in good condition, and evidently receiving the best cultural attention that could be desired. It is worthy of notice in connection with the plant houses that it was in this garden the beautiful and remarkable hybrid *Cereus Maynardi* was raised nearly fifty years ago. Mr. A. Kenny, who was gardener to the owner of the property, Viscount Maynard, crossed *Cereus speciosissimus* with pollen from *C. grandiflorus*, and the seeds so obtained produced plants, one of which flowered, and was figured in "Paxton's Magazine" under the name given above. It proved distinct from both parents, but presented a combination of the characters which rendered it very interesting as a hybrid, as it is really a *C. grandiflorus* with the rich crimson flowers of *C. speciosissimus*. It is, however, rather shy in flowering, and is now very scarce.

An hour or two were agreeably spent with Mr. Stacey in his Verbena Nursery, Dunmow, where he has for many years given the closest attention to these beautiful useful greenhouse plants with the greatest success. Probably no raiser has obtained so many first-rate varieties of Verbena as Mr. Stacey, and their merits are indicated by the numbers of them which have been awarded certificates at South Kensington, for a Verbena must possess some unusual merits to gain that honour now varieties have become so abundant. Proceeding on my way, Cambridge was my next halting place, and there, in company with the genial Curator of the Botanic Gardens, Mr. R. I. Lynch, I enjoyed a ramble through the interesting establishment under his charge, and some of the old college gardens, but some observations on these must be reserved for another opportunity.—LEWIS CASTLE.

LILIUM AURATUM.

THIS the grandest of all the Lilies, and one that receives a great share of admiration both for its noble flower and its lovely perfume, yet it ought to be more extensively grown, seeing how cheap it can be bought and how easily it is grown either in pots or in the open border. It cannot fail to be highly appreciated when grown in pots for decorative purposes. When so grown it is a practice with most growers to repot them annually; by this I mean shaking the bulb out of the old soil when at rest, and putting it into fresh; but from circumstances that have come under my notice I am inclined to think that there is no gain attending this practice. For instance, a plant of *Lilium auratum* was shown at the Matlock Bath Show, August 9th, bearing fifty-one fully expanded blooms, three having been previously picked, thus making fifty-four blooms in all, and this plant, the grower informed me, had been grown in the same pot (9 inches in diameter) for five consecutive years, and had not been repotted during the whole time. This was very remarkable, and I thought clearly proved that annual repotting is not necessary providing the plants receive proper treatment when growing. Bulbs when left undisturbed in the border for several years seem to improve in strength, particularly so when the soil is strong and properly drained. If water is allowed to stand round the bulbs they will grow weakly and shortly die.—ALFRED ANDERSON, *Lea Wood*.



KITCHEN GARDEN.

WITH the advent of a new year attention will be turned away from much that interested us in 1884 to fresh resolutions of higher culture in 1885, and we can only say we hope all such desires will be fully realised. "Where there is a will there is a way," and all who have the means of growing good and abundant vegetables may do so if they will only try. There is no time like the present for beginning anew, the main points being to secure good seeds, to prepare the soil thoroughly, and not to neglect general cultivation.

Good Seeds.—These are of the utmost importance in the production of profitable crops. Nothing can be done without them. It is a great advantage to deal with reliable and respectable seedsmen who can guarantee the freshness and purity of their seeds, but this cannot be done for nothing, and those who think they are going to stock their gardens with seeds at half price will find as a rule that cheap lots are the most expensive in the end. Space forbids entering into a long list of the best varieties of everything to grow during the year, but the seed catalogues advertised in this Journal may be advantageously consulted and taken as guides.

The Preparation of the Soil.—This work which should be done now

and consists of digging and trenching the vacant quarters. There is no better pulveriser of the soil than frost, and it is with the object of securing benefits from this that in turning over the soil it is left as rough as possible at this season. Deep soil is the best for all vegetables, and it always pays to trench to the depth of 2 feet at least to make the soil capable of producing crops of all kinds in perfection. Where the soil is deep cultivate it by all means, where shallow try and increase its depth by adding old and valuable refuse to it.

PEAS.—Where these were not sown in November and there are no young ones coming on, a batch of Suttons' Ringleader or Carters' First Crop should be put in at once. Of all the ways of sowing now, and we have tried many, we prefer sowing the seeds in 3-inch pots. Each pot is half filled with rough moderately rich soil, then from a dozen to a dozen and a half of Peas are put in, and the pot is filled with soil. A hundred or so of 3-inch pots will make several good rows, as each potful at planting-time need not be planted closer than 6 inches from each other. There is one mistake in Pea-sowing at this time which is very common and injurious. As soon as the seed is in it is the general practice to place the pots in a very warm place where the plants appear in a few days, and in a fortnight or three weeks they are several inches high, or indeed ready for planting; but they cannot be planted without much hardening off, and then they are almost sure to suffer from the cold winds of March. To avoid this do not put the early Peas in a warm position, but as soon as potted place them in a cool frame where frost can be excluded; and although they will not advance so rapidly, they will soon make robust growth and form far better plants for putting out in February and March than any which can be reared in heat.

DWARF KIDNEY BEANS.—Sow a quantity of Ne Plus Ultra in pots in a similar manner to the Peas, but the Beans may be placed in a temperature of 65° from the first. Keep them near the glass and fully exposed to the light as soon as the plants show the green leaves. Those sown a few weeks ago in small pots should be transferred to 8-inch pots. Three lots from 3-inch pots may be placed into every 8-inch pot; use rough rich soil in potting, make the soil very firm, and grow them on in a temperature of 65° or 70°.

EARLY POTATOES.—Any approved early variety may now be planted in quantity in frames or pits. Where the pits are artificially heated no manure of a fermenting character will be required, as if the Potatoes are planted in a bed the pipes will give sufficient heat to suit both top and bottom growth. Where deep frames can be used fill them with a quantity of leaves and manure as a hotbed, put about 1 foot of good soil on the top of this, and plant the tubers 3 inches below the surface and 15 inches apart. If moveable frames are available make up a good firm hotbed 4 feet high at the back and 3 feet high at the front, place the frames on this, put the soil in, and then plant. As all Potatoes under the influence of bottom heat soon send up their shoots they must be protected from frost almost from the beginning.

Radishes and Early French Horn Carrots may be sown in frames prepared as if for Potatoes, but these will both succeed in a lighter soil than the Potatoes. One part at least of the Carrot soil should be sand.

Veitch's Extra Early Dwarf Forcing Cauliflower should be sown in a pot or box, as a hundred or two of plants will make a good batch for an early supply. For several years past we have found the plants from this sowing do better and come in earlier than those sown in autumn, and they do not require so much attention. The seed should be sown in a very gentle heat, air and light being admitted freely to prevent their being drawn too much.

Webb's Early Dwarf Red Tomato should be sown now by all who wish to have ripe fruit in March. A small pinch of seed will be sufficient to produce several dozen plants, and they will grow very freely in any structure where the temperature is 65° or 70°. Rhubarb, Seakale, and Asparagus: Additional quantities of these should be taken in hand for forcing.

Kidney Beans.—Now is a good time to sow a good batch of Osborns' Forcing for fruiting early in spring. Fill a number of 3-inch pots half full of light soil; put six or eight seeds into each on the top of this, cover with a little more soil, and then place them in a heat of 65° near the glass, and in two or three weeks' time they will make a good batch of healthy plants to shift into 8-inch and 9-inch pots for fruiting in February and March.

HARDY FRUIT GARDEN.

Canker.—Early in the autumn we mentioned the importance of prompt and timely attention to root-pruning, then after this came the equally urgent advice to plant early in November, and now that work is less pressing we have time for a careful inspection of all the fruit trees, and for the application of a remedy for disease so affecting the health of the trees as canker undoubtedly does. In our boyhood we had a garden, and it was our ambition to become possessor of a fruit tree to plant in it. One day we found a young Apple tree which had been rooted up and cast away because it was so badly cankered. Eagerly did we assume ownership of the tree. The dead branches were cut off, and it was planted in the best soil we could procure for it. The tree grew, the canker wounds healed, and in due course it became perfectly healthy and bore nice crops of fruit. That was a life lesson which we have never forgotten, for we had unknowingly done all for the tree that was possible, and, it may be, afforded a lesson to older and wiser heads than ours. We have boys of our own growing up to manhood now, yet notwithstanding the lapse of many long years since the planting of our first fruit tree, which that fact implies, we can do no better now for trees suffering from canker arising from the roots having got down into the cold subsoil. Lift such

trees, replant in fertile soil, top-dress annually, afterwards with specially prepared soil, or failing that, with manure, and the trees will become healthy and continue so. The soil we use for the replanting and subsequent top-dressing is really a compost consisting of all the garden weeds, road sidings, turf trimmings, decayed vegetables, and other garden refuse. Upon this we put a thick layer of stable dung, another of coal ashes, and a still thicker one of 180 bushels of lime fresh from the kiln. The heap is then turned and mixed, and again turned in about a week, by which time the lime is slacked and the mixing more thorough; yet it is turned once more and thoroughly blended, and then we have a grand heap of the best possible compost for fruit culture, infinitely preferable to the best fibrous loam both for planting and as a top-dressing. Failing the accumulation of enough poor soil with the weed, we can easily add enough to impart consistency to our heap.

We commend this plan to the attention of those gardeners who pin their faith to fibrous loam and long in vain to possess some. For their comfort and guidance we may add that fibrous loam is often a snare and delusion. Fibre decays, vegetable matter becomes absorbed by the greedy roots, the soil then soon becomes poverty-stricken, and frequently settles down into a compact mass, through which rain water falling upon the surface passes more and more slowly. But in our compost this can never occur—the lime and coal ashes prevent it, and the annual surface dressing affords fresh supplies for the roots and serves to attract them.

It must not be forgotten, however, that canker is also caused by severe frost; the severity with which the extremities of fruit spurs are often attacked by canker proves this. Shelter must therefore be regarded as another important factor in fruit culture. Trees raised by budding and grafting are never so hardy as wildlings. We have plenty of wild Cherries and Crabs, pictures of health and vigour; yet many of our Apple trees have canker, and some sorts of Cherry never take kindly to the soil. The hint so given us by Nature is not difficult to understand. We must feed and protect our garden trees with all possible care, and now is the time, before the pressure of spring work comes again, to renovate the soil, to lift and replant where the necessity is clearly apparent, and to do all we can to render our gardens snug and sheltered from hard frost and cold cutting winds.

FRUIT FORCING.

FIGS.—Early-forced Trees in Pots.—When the terminal buds have fairly broken advantage may be taken of any favourable change in the weather—*i.e.*, mildness after the turn of the days—for increasing the mean temperature of the house, as when fairly started into growth the Fig delights in a good heat, plenty of moisture, and all the light that can possibly be secured to it. On this account the glass should be kept perfectly clean, and the increase in temperature will be more beneficial if it can be obtained from fire heat combined with sun heat by day in preference to maintaining a temperature in dull weather, and especially at night, that will cause any great advance in growth at those times. Syringe the trees and walls twice a day on fine days, but when the weather is dark and wet omit the early afternoon syringing and damp the floors in the evening instead, as it is important the trees become fairly dry before nightfall. Examine the plunging material, and if it exceed 70° to 75° let it be turned over as a means of reducing the bottom heat, and be careful not to allow the heat about the pots to rise above the temperature indicated. Provide a night temperature of 55° to 60°, ventilating a little at 70° to give a little air when the morning promises an increase from gleams of sun, and close sufficiently early for the temperature to run up to 80°.

Early House of Planted-out Trees.—If conveniently arranged for the introduction of a good body of fermenting leaves and short stubble little fire heat will be necessary at night until the buds are swelling, especially when the trees have been started about the same time for a number of years; but young trees that have not been forced will require a somewhat higher temperature. Syringe twice a day with water a little warmer than the air of the house, and if it be found necessary to repeat the root-watering use water at a temperature of 80° to 90°.

Late Houses.—Pruning should be done as soon as convenient. Thin out the wood that has reached the extremity of the trellis, wash the trees with warm soapy water, and in the event of scale having obtained a hold add a wineglassful of petroleum to every gallon of the water, and keep it well mixed by constant stirring whilst being used. Have the house thoroughly cleansed.

Young Trees in Pots.—Prepare the compost for repotting young plants intended for next year's forcing, using good strong loam, a sixth of old mortar rubbish, and a little thoroughly decayed cow manure. If wanted for early work the plants should be placed in gentle bottom heat by the end of the month, in order that they may make and properly ripen their growth by September. Train them to a clean straight single stem, and allow the radiating shoots to form the foundation of a good pyramid. Insert cuttings or eyes of any varieties it is desired to increase, and in order to make a good growth they should be encouraged with bottom heat and started not later than the end of this month or the beginning of February.

PINES.—If it be found necessary to bring together any plants for the purpose of inducing them to come into fruit sooner than they would under other circumstances, a light house or pit should be provided where they can have the benefit of more heat. This being done, a batch is to be selected from the successional plants, choosing those which appear likely to show fruits quickly, which are quickly distinguished by an examination of the centre or hearts of the plants, those likely to throw fruit having high centres and are quite stout in the upper part of the plan stem. Let

these be plunged in a bed which should stand constantly at a temperature of 90° to 95° at the base of the pots. If the plants are in the least dry water them copiously, and maintain the top heat at 65° to 70° at night, with 5° more from fire heat by day, and 10° to 15° from sun. Keep the atmosphere about the plants in an invigorating and genial state by damping available surfaces as they become dry, and syringing as may be necessary.

THE FLOWER GARDEN AND PLEASURE GROUNDS.

Tree and Shrub Moving.—Whenever the weather is fine and not frosty the work of tree and shrub planting and transplanting should be pushed forward. It may be done with safety later on—say up till May, but much more care must be taken, and the plants will require much closer attention in the shape of watering during the following summer; besides, later on there is much other work to be done. Many shrubberies of comparatively recent formation if planted at all thickly will now pay for thinning out in order to enable the choicer shrubs and Conifers to grow to their full dimensions. This thinning out, provided the shrubberies have been properly planted in the first instance, is a simple matter, all the commoner kinds being filled in after the choicer shrubs and trees have been planted that are to be regarded as permanent. Those inexperienced in forming shrubberies should first mark out with tall stakes where they propose to plant either deciduous trees, Conifers, or tall-growing choice evergreens, and to avoid subsequent confusion it is also advisable to label each stake with the name of tree or shrub to be substituted for it. Then if smaller stakes are inserted where it is proposed to fill in with smaller flowering shrubs and evergreens, it can easily be ascertained how many of each are required, and the whole process be thus much simplified.

Why many trees and shrubs fail to grow satisfactorily is simply because they are planted in much too poor ground, and in many cases being only crammed into small holes. The ground should in most cases be either very deeply dug or bastard-trenched, and some rich soil and manure, or plenty of peat, leaf soil, or spent tan, be worked well about the roots of the trees as they are being planted. Very often the trees and shrubs have been previously growing in good soil, and it ought not to be expected that they would "take to" poor and often clayey soil of the intended shrubberies. They may do well in such soil eventually, but they must have some good soil about them in order to give them a good start.

The Process of Lifting.—In no case when lifting trees or shrubs for the purpose of thinning out the shrubberies, or which are being transplanted from a nursery, should they be dragged out of the ground, as but few will survive such rough treatment. Large balls of soil may not be necessary or obtainable in each instance, but that is a good reason why as many roots should be preserved as possible. The operator should open a trench round each tree or shrub, working with his side to them, and thus preserve many roots that he would otherwise cut through. Having opened a deep trench well under the principal roots, he can then undermine the tree and reduce the balls of soil to moderate proportions with ease; and when it is left standing on a slight pedestal of soil a strong flat board or a handbarrow without legs, such as are used by masons, can be worked under, any top roots remaining be cut, and the tree carefully slid on to the board or barrow. It can then be carried to its fresh site, stood just as best suits the position, and the board or barrow carefully withdrawn. If they have to be carried to a considerable distance a small handtruck would be serviceable, but the tree or shrub should never be taken off the board or barrow, nor be carried about other than in an upright position, or a greater portion of the soil will crumble away from the roots. Very large trees may be transplanted safely, but seldom by inexperienced persons, or without appliances suitable for the work. They also generally need preparation one year in advance for this removal. This preparation consists in cutting a deep trench round the tree slightly beyond the proposed size of ball, much of the soil thrown out being replaced with leaf soil or other fairly light rich soil. All the roots cut through will thus be induced to form a mass of fibres, and these will, when the tree is moved, serve to keep the ball together, and also support life when in its fresh quarters.

Planting and After-treatment.—In most cases it is best to plant slightly above the level, and large trees especially seem to recover from the severe check most quickly when deposited almost on the surface—this being principally due to the fact of the surface soil being most conducive to root-action. The more the plants or trees are raised, however, the greater is the danger of their becoming injuriously dry at the roots. For one season at any rate newly planted trees or shrubs should not be allowed to suffer for want of water, or death in many cases will be the result. When first planted, if at all dry at the roots or the surrounding soil is dry, they should receive a good soaking with water, but in the event of their being sufficiently moist the first watering may well be deferred till the drying March winds are being experienced. Driblets are of no avail; they must be thoroughly soaked, and always before the ball becomes too dry to be easily moistened again. It is during the spring months when the weather is sometimes dry and drying winds are experienced that many newly moved trees are greatly injured, but they must also be well looked after later on. Many trees and shrubs, notably Rhododendrons, if required for planting in a loamy or clayey soil should be procured where possible from nurseries where they were reared in somewhat similar soil, or they will not always take to their new quarters. Failing this endeavour to procure a quantity of common peat or good leaf soil for mixing with the soil. All newly planted trees and shrubs should have the ground about them heavily mulched with rough manure or litter, and any requiring it be at once properly supported with stakes.

THE BEE-KEEPER.

BEES IN RELATION TO FLOWERING PLANTS AND FRUIT PRODUCTION.

[A Lecture delivered at South Kensington by F. Cheshire, Esq., F.R.M.S.]

AFTER referring incidentally to the greatly increased profits now attainable by bee culture in consequence of our improved methods of management Mr. Cheshire remarked: If we take our stand before a flourishing hive on a fine summer day we note that the busy workers as they settle, at their return from their excursions in the fields, bear in numerous instances variously coloured pellets on the tibia of their hind legs. The ancients supposed these masses to consist of wax, and even Reaumur fell into this error, referring to these pellets as "*la cire brute*." We now know perfectly well that they are composed of multitudes of pollen granules which have been gathered by a process we shall hereafter examine, and the use of which we shall presently see, and that wax is not collected but secreted by glands situated beneath the abdomen. Could we follow these workers into the darkness of the hive and here observe their movements we should find that they walk up the sides of their combs seeking first a cell into which the pollen may be appropriately placed, and they then turn to another, either empty or already devoted to honey, and into that they discharge from their honey sack the nectar which they have secured from the honey glands of the blooms visited.

Two questions now present themselves to us. Why do the bees so industriously gather these substances? and why do blooms provide them? It is to the second of these questions that we must devote our most serious attention, but the first if we would really understand the second must not be overlooked. If we were to proceed to examine the combs of the hive just referred to we should find many hundreds of their cells, containing each a tiny pearly coloured egg about the 1-14th of an inch long and the 1-70th of an inch in diameter. These eggs have been deposited by one insect, called, although very inappropriately so, the queen, for she in reality exercises no authority, and when old and fading is turned out in favour of a more vigorous successor. This mother bee, for so we may more accurately designate her, is capable of depositing no less than from two to three thousand eggs daily during the breeding season. She inserts her abdomen into a cell and in two or three seconds withdraws it, when the egg is found adherent to the cell-base. This duty of ovipositing is so onerous that she is excused all care of her numerous progeny, which is attended exclusively by the workers, formerly but falsely called neuters, for they are really females, but with their reproductive organs aborted.

The egg kept warm by heat constantly produced by oxidation of honey in the bodies of the workers develops within it its germ, and in about three days a very small grub emerges, with but imperfectly formed mouth, no distinguishable eyes, and no organs of locomotion. It is a necessity that food should be brought to it as it lies at the bottom or back of the cell. The workers acting as nurses now sedulously tend it, preparing in their bodies a highly nutritious food resembling thin arrowroot and elaborated from water, honey, and pollen. The two latter we have previously traced to their origin, and it needs only now be said that the first of these is a true force-former, giving to the grub energy for movement and for the vital processes to be continued within it, while the pollen is a true tissue-former, being rich in nitrogen and containing potash, phosphorus, and sulphur salts. The food is poured over the body of the grub by the nurse, and so liberally that the bantling literally floats in it; one side of the body, however, always remaining dry, so as to be capable of taking in a due supply of air through the eleven spiracles or breathing-holes which may be traced in a line along its side. The imperfect mouth has its work supplemented by an ability to absorb aliment by osmose through any portion of the skin. Rapid growth is the result, and soon a large fat "gentle"-like creature two-thirds fills the cell. The ever-watchful workers at this point commence to imprison it by placing over the mouth of its cell a cover, technically called the sealing, which is composed of pollen grains and wax shreds, and which is pervious to the air, so that the needed amount of oxygen may reach the grub within. The grub also makes preparation for the wonderful transformation which awaits it, by building over itself a silken cocoon. During twelve days developments and alterations are continued, which our time will not permit us to follow in any detail, but in the end changes of a most radical nature are effected. The nervous system is completely recast. Instead of a

chain of pretty equal ganglionic masses running the length of the digestive tube, nerve-centres are established in the neighbourhood of the insertion of the wings and legs to give to these parts the abounding energy they require in the perfect insect. The mouth and eyes have each now considerable ganglia, and the sting is also provided with its source of stimulus. Legs marvelous in form and adaptation, and carrying, cleaning, gathering, feeling, and modelling appliances are evolved. Four beautiful wings are provided, new glands have made their appearance, eyes of great complexity are now possessed, and last but not least a tongue has presented itself, so wondrously perfect and minutely delicate, that some points in its structure are until now furnishing the microscopist with unsolved if not insolvable problems. In a word, the soft-bodied helpless grub has become a bee. Time forces us to leave this tempting subject, simply remarking that we have answered our first query, for we now see why honey and pollen are gathered. Let us now address ourselves to the second, and inquire why the blooms furnish these substances to their insect visitors.

Blooms are produced by plants in order that seeds may follow, and so the race be continued. Two parts are essential to this reproduction—the anther and the pistil, the latter very generally occupying the central position. The anther is usually a double-celled pouch, the contents of which by segmentation breaks up into a number of perfectly similar parts called pollen grains, which, though minute, are complex in structure. When these are mature the anther splits or dehisces, and the pollen escapes, but it needs in some way to be applied to the termination of the pistil called the stigma. When this application is effected the pollen grain absorbs moisture, its interior portion swells, and actually throws out a tube which often grows to a great length in making its way towards the unimpregnated nucleus of the ovule which is situated in the ovary at the base of the pistil. In this nucleus a large cavity filled with protoplasm has developed, called the mother-cell, within which we find the embryonal vesicle to which the contents of the pollen grain is transferred by the channel of the pollen-tube. This is fertilisation, and upon it depends the production of seed, for the new individual plant has its beginnings from this interfusion.

An examination of most blooms will show that the essential organs before referred to are so placed that an accidental or unaided transfer of pollen to stigma is unlikely, and where this arrangement of parts is not found it frequently occurs that the anthers ripen and dehisce much before, or not until some time after, the stigma has so matured as to be ready for pollination. In the former case, as we may observe in the common garden Nasturtium (*Tropæolum majus*), the pollen is all carried away by insects by the time the stigma presents itself, so that if fertilisation be effected it must be through the bringing of pollen from other blooms still shedding it. Insects are the means which accomplish this, and to secure their visits the blooms spread them a banquet.

(To be continued.)

HIVE CONSTRUCTION.

PERMIT me to thank "A Lanarkshire Bee-keeper" for his reply to my last letter. I think I can easily construct a hive and stand from his letter of the 11th ult. without troubling him to send me a pattern box and stand. There are, however, a few points I should like explained. 1, Do lateral slides cover spaces and part of frames, or simply run along the top bar of the frame. 2, Are the perforated zinc and bottom slide both on the lowest box? 3, The middle box (2 inches deep) I assume is bottomless and lidless? What is its use, and when it rests on the perforated zinc is there not a crevice between it and the lowest box unless a ledge is put round? 4, Do sections cover all the spaces between the top bars of the frames when in use; if not (and the lateral slides do not cover the spaces outside the sections), how are the spaces covered beyond the sections? 5, The sizes (length, breadth, thickness) of tops, sides, and bottoms of the frames of body hives, and also the sizes for sections. 6, When sections are braced together how are the sides of the two outside sections covered? 7, Could not a shallow (crate) frame be used for the sections and the sections suspended by small tacks similar to stock frames? It strikes me that then they (the sections) could be easily withdrawn, and there would be free access to the bees without the cross pieces usually fixed in crates for the supers to stand upon, and the tacks could be withdrawn before the sections are packed for market. 7, I should be thankful for a description of an outside case for square hive which your correspondent has described.—BASIL.

QUERY 1, Yes; but perhaps "Basil" might find two slides on the top bar answer his purpose as well. Thus if the top bar measure $1\frac{1}{4}$ inch each slide will require to be $\frac{5}{8}$ of an inch. They will then close in the middle; he can try that. The slides must be of mild wood, so that they lie flat.

2, Perforated zinc must be on one edge of the floor and sliding boards on the other, so that it will reverse if desirable.

3, What "Basil" calls the middle box is the floor as described in

No. 2 query. It is the underbody box that rests on it. There is no crevice. Ledges are objectionable and should never be employed on hives.

4, It depends entirely upon the will of the bee-keeper how much space is covered with sections. The uncovered spaces are all closed by the use of the slides, but should have additional packing to prevent the escape of heat and so hasten the completion of supers.

5, "Basil" must make his hive first, then get the measurement from it, for the frame being shallow a bottom rail is not required; the ends may be $\frac{1}{4}$ inch thick and about 1 inch broad; the top bar $\frac{1}{2}$ inch thick and $1\frac{1}{4}$ inch broad.

6, The outside sections may have either two pieces of wood with a piece of glass in the centre nailed permanently (on outside sections) or moveable as desired, or it may be all glass or wood.

7, "Basil's" suggestions do not remove the objectionable features in sections such as crates and bottom bar of section, which ought to be avoided, causing unnecessary expense and trouble, besides thwarting the bees and reducing the yield of honey. I have tried similar plans—better, no doubt, than the ordinary way, but otherwise deficient from the section I have explained in previous issues of this Journal. It contains no obstruction to the bees, and forms of itself a packing-case preferable to any crate containing the common sections.

I have omitted answering some of the queries fully, because if "Basil" peruses the article in the number for the 18th December, pages 537, 538, he will learn from it the particulars required, and if he further studies the former replies to his questions he will, I think, attain his point.—A LANARKSHIRE BEE-KEEPER.

SPURIOUS HONEY.

It is a fact well known to bee-keepers that there is a large quantity of glucose and other substances imported into this country under the name of honey. According to the "American Bee Journal" sulphuric, nitric, and muriatic acids are employed in the manufacture of glucose, and lead is present as well as arsenic in some kinds of sulphuric acid.

A correspondent, "T.," page 494 (November 27th), asks me to make myself acquainted with the "Yankee methods of apiculture, and read their bee journals." I am not altogether unacquainted with them; and because I choose to warn your readers when I am convinced such warnings are needed in the interests of the public generally and of that section known as bee-keepers and genuine honey raisers, am I to be held as maligning honoured transatlantic brethren? I have had the pleasure of meeting Mr. Thomas C. Newman, Editor of the "American Bee Journal," who has often warned the worshippers of "The Almighty Dollar" that they were ruining by adulteration their own and their honest brethren's trade in honey. Nor has the Editor been alone in raising his voice against practices that many others equally condemn. The following are extracts from that Journal January 19th, 1881, No. 3, page 18:—L. H. Schudder says, "I feel the importance of waging an incessant warfare against the use of the vile stuff in adulterating honey, sugar, and syrups of all kinds. We, as honey producers, feel the effect of adulteration of honey keenly. So long as enough honey can be obtained to flavour the compound the market will be supplied with 'pure honey?' Now when you take into consideration that they obtain over three gallons per bushel of what they call 'glucose' or corn syrup, you will see that fifteen million gallons annually are thrown upon our markets to be sold and used in various ways, but not one gallon is sold to the consumer by its proper name, the people buy it in their honey, candy, sugar, golden syrup, drips, and in other commodities we know not of." Again, at page 22, J. P. H. Brown says, speaking of glucose, "It is now used in enormous quantities for the purpose of adulteration in sugars, syrups, and honey. Fully one-fourth of all the common grades of sugar consists of glucose." Thurberg says, "In order to prevent the honey from granulating it has been saturated with corn syrup." Then he adds, "that there is no doubt but this nefarious practice of adulterating the food we eat is daily on the increase, that if the adulteration of honey is allowed to go on without restriction it will ultimately destroy the entire honey-producing interests." Then at page 28, under the head of "Compulsory Honesty"—"They do not adulterate honey of course, but they have to add a certain quantity of glucose to keep it from granulating." The foregoing is sufficient to show that glucose is largely employed for fraudulent purposes, and subsequent numbers teem with like strictures.

I never stated that Heather was the only pure honey in Scotland. If your correspondent would indulge in a holiday trip to Lanarkshire and Ayrshire in the coming season and visit their apiaries, he would see the exudation of the white Clover stored in unsurpassable purity. The latter county, Ayrshire, is also entitled to the honour of inventing the best hive and system of bee-keeping—viz., the Stewarton, now indelibly stamped as such. After Lanarkshire he should visit Ayrshire, then turn his steps to Glasgow, and passing to the archives of the police court, he would find, under the Adulteration Act, 1875, the name of a respectable west end shop-keeper, who was fined £2 for selling American adulterated honey, certified by Dr. Clark, city analyst, as containing 57 per cent. starch, glucose.

As to hives, I should have thought your correspondent would have known that the Rev. L. L. Langstroth only gave his frame hive to his own continent. For more than ten years before I either saw Langstroth's book, or heard of him, I had frame hives of such a construction that no frame hive is now made without my ideas, appropriated both by my own countrymen as well as by Americans.

If America has taken such a lead in apiculture, would your correspondent "T.," kindly name on his list given, who were using, making,

and disseminating in 1862 (one year after the oldest bee paper in America was established) comb foundation as was then the present writer, besides constructing the apparatus for its manufacture, although "Hoge" another "refiner of honey" stated in the *Pictorial World* a few months since that he was the introducer of it in 1876. I chance to know more of American bee literature possibly than "T." is aware of. One of my articles, that appeared in this Journal a few months since, appeared lately in an American one as a genuine *bonâ fide* article of an American writer, and if "T." turns the leaf on which his remarks appear, he will find a paper, read before an admiring transatlantic audience, entitled, "Foul Brood; its Cure by Fasting without the use of Drugs or Chemicals," and then let him turn to vol. v., new series, page 78, of this Journal, and he will find the cure as given by its discoverer, the late Mr. T. W. Woodbury, twenty-one years ago, who, as "A Devonshire Bee-keeper," most ably guided bee-keepers in this periodical.—A LANARKSHIRE BEE-KEEPER.

BEEES IN A CHIMNEY.

CAN you tell me in the next number of your Journal how I can secure a stock of bees that have taken up their abode in an outside chimney about 20 feet from the ground, that has an opening about 7 feet from the top through which they enter, and between which and top they have their combs? I should like to take the stock next season alive if possible, and I know how to manage, as I fancy it will not be an easy matter upon the top of a ladder. Could they be driven up to the top into a skep by any means?—H. T.

THE situation and structure of the building as given is too deficient in details; but assuming that it is a chimney in an outside gable which must not be interfered with by the removal of any part, I would leave them until warm weather, selecting a fine day for the operation. A proper survey of the chimney must be taken and arrangements made accordingly. A light and small platform must be made to stand upon at the chimney top. A piece of canvas must be prepared to fit with a little slack inside the chimney. In order to keep this distended, the rim must be supplied with something to insure this, such as a piece of indiarubber tubing, wire, willow, or cane, so that the canvas will yield to any irregularities and keep as close to the building as possible; then fasten little hooks of wire at intervals round the edge of the canvas, which completes this part. Next prepare a truss of something that will exactly fit the chimney, cover this material with some old cloth and smear it well with carbolic acid, having a card attached so that it may be drawn from its place I will hereafter explain.

Another article required is a triangle to rest upon the chimney top. This triangle must have a hole at each end to allow strings to pass through and keep them the proper distance apart. Plaster up the entrance and prepare for the assault. A slight knocking on the gable will cause the bees to gorge themselves and become tame. Take three strings long enough and three pieces of gas piping which the strings pass through, having a painted bullet of lead at each end. Keep the end tight to the pipe and push these down through the combs close to the chimney and equidistant from each other. When the piping is clear of the combs slack the string, and the bullet will take it down, leaving the pipe behind amongst the combs. Be sure that each string is marked, so that an operator beneath will know the proper place to fasten it to the canvas. After this is done, if the chimney is dark a reflector may be necessary to show those on the top of chimney the position of the bees and combs. When this is ascertained, some instrument is required which they must be previously provided with. If the chimney is square a broad cutter will do, but if round the instrument must be narrow, so that every piece of the comb will be detached. If the hand could reach far enough a common saw might do to sever the combs from the wall; failing that, a piece of sheet steel fastened to an elastic handle will do it efficiently. Before cutting the combs the canvas must be drawn up hard to them and the cords held or fastened so that they will not slip during the operation of severing the combs.

After these are all cut replace the triangular piece or pieces of wood on chimney top. Now draw the cords, which will bring up the canvas, combs, and bees. As the combs appear lash round the cords a piece of cloth and tie firmly; then as the contents are brought up fasten the under edge of this cloth to hooks in canvas, this will steady the combs while they are lowered either down the chimney or over to the outside. If there is much soot in the chimney the latter way will be better. When the bees and combs are safe, bring up the chimney by a cord lowered from top the carbolicised truss to where the combs commenced, and further carbolicise the inner walls and round the entrance. The distracted bees will soon find their way to the combs, which may be transferred to a frame hive.—LANARKSHIRE BEE-KEEPER.

TRADE CATALOGUES RECEIVED.

Sutton & Sons, Reading.—*Amateur's Guide in Horticulture, 1885 (illustrated).*

Daniels Brothers, Norwich.—*Illustrated Guide for Amateur Gardeners for 1885.*

W. Leighton, 89, Union Street, Glasgow.—*Catalogue of Vegetable and Flower Seeds.*

Dickson & Robinson, 12, Old Millgate, Manchester.—*Select Vegetable and Flower Seeds.*

Dickson, Brown & Tait, 43 and 45, Corporation Street, Manchester.—*Garden Seed Catalogue and Cultural Guide.*

Charles Sharpe & Co., Sleaford, Lincolnshire.—*Seed List, 1885.*



TO CORRESPONDENTS

* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Books (J. Woods).—Mr. D. Thomson's "Handy Book of the Flower Garden" (W. Blackwood & Sons); "The Greenhouse for the Many," published at this office, price 9d., post free 10d.; and "The Wild Flowers of Great Britain," also published at this office, will give all the information you require.

Melons for Frame Culture (S. F.).—Blenheim Orange is a handsome and good scarlet-flesh variety, and a good green-flesh companion is the Hero of Lockinge, both being well adapted for frame culture. As you have only a brick pit you will do well to delay sowing and planting till near the summer months, as in your case there will be no possibility of renewing the bottom heat. With common box lights the case is somewhat different, as the bottom heat can be kept up with fresh "linings" of heating material. April will be quite soon enough for you to sow the seeds, and before that time fuller information on the subject than can be given in this column will be forthcoming.

Culture of Bomarea Carderi and conferta (G. A. T.).—These plants succeed well in an intermediate house, or at the warmest end of a greenhouse, where they can be trained to the roof and fully exposed to light. There should be no difficulty in flowering them under such conditions, but they must make a strong and unrestricted growth to ensure success in this respect. The soil should be light, sandy, and well drained, but a little liquid manure will encourage the plants considerably.

Mushrooms (Inquirer, W.).—The most likely cause of the Mushrooms coming with "thick and long stems before the top is formed well" is, we think, due to the atmosphere being too dry and variable in temperature, the heat being all centred in the middle of the house or its upper part, and consequently above the Mushroom bed. We should try covering with a little dry soft hay, which will probably enable you to overcome the difficulty, which we presume only takes place in changeable weather, especially when fire heat is most needed. Keep the walls, floors, and other available surfaces well damped, but avoid damping the flue, as it will generate moisture quickly and prove inimical to the growth of the Mushrooms. They like the atmosphere uniformly moist—a nice genial moisture—neither too wet nor too dry, extremes being fatal.

Semi-dissolved Bones (X.).—The bone manure seems suitable for applying to a Vine border as a top-dressing, a 6-inch potful being ample for a square yard, and a similar quantity of wood ashes; but we should mix it with turfy loam at the rate of a 6-inch potful to bushel of loam, a peck of cow dung, thoroughly incorporating along with the wood ashes, and after removing the loose surface soil of the borders down to the roots put on a top-dressing, 2 or 3 inches thick, of the prepared compost. The compost above named would answer admirably for Strawberries in pots, applying when the plants are taken indoors for forcing, loosening the surface soil, taking off the loose, and adding the fresh material. It would be an improvement to add half the quantity of soot as of the other two—viz., bones and wood ashes, or half a potful of the soot to each bushel of soil.

Libonia floribunda Leaves Falling (S. F.).—In all probability you did not house your plants early enough. We find they quickly lose their leaves if overwatered at any time, and invariably house the plants early in September, or before cold soaking rains are anticipated. It is a little odd that the old plant retains its leaves, but it may be it has better filled the pot with roots, and is therefore less liable to suffer by overwatering. Excessive dryness at the roots would prove injurious, and a shift given too late in the season might also have done the mischief. A cold greenhouse, again, does not suit them, the temperature of an intermediate house or warm conservatory being best calculated to bloom them properly. You evidently do not require to be told how to grow Libonias, but you leave us to guess what the late autumn treatment has been.

Peas for Succession (Reader).—Sow William I. on a warm border as early in February as the state of the ground permits, and again early in March in the open, and with it a row of Telephone. When these are pushing through the ground sow another row of Telephone and one of Criterion, and the latter variety and Champion of England about a fortnight later. When the last sowing is up, or in about another fortnight, sow a row each of Champion of England and Ne Plus Ultra, and in this manner June, July, and August should be well provided for. For the September crops Ne Plus Ultra is the best, and a row or rows should be sown about the middle and end of May, and if you can afford the room yet another sowing should be made early in June, and supposing the ground is well manured and deeply dug, and the rows mulched and well watered in dry weather, they will continue to yield till cut down by frosts. The two Grapes you mention will do well together, and the variety you inquire about is well adapted for the purpose you require it.

Climbers for Conservatory Wall (Thos. Jones).—We presume you can make a border for the plants, and have it properly drained; this is essential. Nothing would look finer and answer better, especially if the plants could have the run of the back part of the roof in addition to that of the wall, than *Lapageria rosea* on one side and *Lapageria alba* on the other. It

would need a little time to get them established, but once established they would under ordinary treatment do well, and be extremely beautiful from the window. Other good wall plants are *Plumhago capensis*, *Clianthus magnificus*, *Rhynchospermum jasminoides*, *Habrothamnus elegans*, and *Thibaudia acuminata*.

Hollies and Aucubas not Fruiting (A Scotch Subscriber).—Hollies are not bi-sexual, but the flowers on many shrubs are sterile. It is not possible for us to indicate the local causes that contribute to the result complained of. We know on good authority that Hollies fruit freely in an exceptionally wet district in the south-west of Scotland. As to the Aucubas not fruiting, are you sure that both kinds have produced flowers together? If the male plant flowers first, and you collect pollen and apply it to the flowers of the fruiting form berries will follow, weather permitting. We do not find this necessary, but have known persons keep male plants in tubs behind a wall facing the north to retard the expansion of the flowers until those on the other shrubs opened, then if the weather were favourable for the dispersion of pollen fertilisation was effected.

Aphides on Peach Trees (B. J., Co. Dublin).—We never saw the wood of Peach trees so seriously infested with aphides at this season of the year as the example you have sent us. It is a pity remedial measures were not adopted before, as the trees must be injured by the plague of insects. At once dissolve 4 ozs. of softsoap or Gishurst compound in a gallon of boiling water, and stir in a pint of strong tobacco water and a wineglassful of petroleum; then add another gallon of water, again mix by violent agitation and syringe the trees thoroughly while the preparation is rather too hot for the barrel of the syringe to be held in the hand unprotected by a leather glove, or say at a temperature of 130°. This will destroy all the insects that are reached. A solution of nicotine soap of the strength of 4 ozs. to each gallon of water would also destroy them, so you can use which of the insecticides that may be the most readily procurable. By adding 4 ozs. of sulphur to a gallon of the mixture and sufficient clay to form a paint you might with advantage apply this to the branches with a brush after syringing, taking care not to dislocate the buds. Every part of the house should be thoroughly cleansed, the woodwork and glass being washed with hot water, the walls limewashed, and 2 or 3 inches of soil removed from the borders and fresh compost added. It is not possible for trees to prosper in a house so greatly infested with insects as yours evidently is. Fumigation and forcible syringing must be resorted to in the spring and summer to prevent the increases of insects, or you cannot hope to have healthy trees and enjoyable fruit.

Names of Fruits (W. W. W.).—Your Apple is not known. It is neither the Blenheim Orange nor the Dutch Mignonne. (W. Crowder).—1, Withington Fillbasket. 2, Resembles Lane's Prince Albert.

Names of Plants (Clifton).—1, *Acacia platyptera*. 2, *Acacia armata*. 3, *Diplacus glutinosus*. All these plants succeed in a greenhouse or similar cool house—the Acacias in a compost of peat, loam, and leaf soil; the *Diplacus* in loam and leaf soil, with sufficient sand to render the compost porous. (T. B. L.).—The three Orchids are all varieties of *Laelia albida*; 1 is *L. albida Marianæ*; 2, *L. albida superba*; 3, *L. albida*, ordinary form; the *Crinum* is *C. capense*. (Mrs. F.).—*Odontoglossum Insleayi*.

COVENT GARDEN MARKET.—DECEMBER 31ST.

OUR market is at a standstill, with large supplies of No. 1 Scotia and Canada Apples still arriving. Grapes in demand at increased values. Kent Cobs dull.

		s. d.		s. d.		FRUIT.		s. d.		s. d.	
Apples	½ sieve	2	6	3	6	Oranges	100	4	0	6	0
Chestnuts	bushel	16	0	0	0	Peaches	per doz.	0	0	0	0
Cobs, Kent ..	per 100 lbs.	60	0	0	0	Pears, kitchen ..	dozen	1	0	3	0
Currauts, Red ..	½ sieve	0	0	0	0	„ dessert	dozen	2	0	6	0
„ Black	½ sieve	0	0	0	0	Pine Apples English ..	lb.	1	6	2	0
Figs	dozen	0	0	0	0	Plums	½ sieve	0	0	0	0
Grapes	lb.	2	0	4	0	Strawberries	lb.	0	0	0	0
Lemons	case	10	0	15	0	St. Michael Pines ..	each	3	0	7	0

		s. d.		s. d.		VEGETABLES.		s. d.		s. d.	
Artichokes	dozen	2	0	4	0	Mushrooms	punnet	0	0	1	6
Beans, Kidney ..	lb.	0	3	0	0	Mustard and Cress	punnet	0	2	0	0
Beet, Red	dozen	1	0	2	0	Onions	bunch	0	3	0	4
Broccoli	bundle	0	9	1	0	Parsley	dozen bunches	2	0	3	0
Brussels Sprouts ..	½ sieve	2	6	3	0	Parsnips	dozen	1	0	2	0
Cabbage	dozen	0	0	1	0	Potatoes .. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Capsicums	100	1	6	2	0	„ Kidney	cwt.	4	0	5	0
Carrots	bunch	0	3	0	4	Rhubarb	bundle	0	4	0	0
Cauliflowers	dozen	2	0	3	0	Salsafy	bundle	1	0	0	6
Celery	bundle	1	6	2	0	Scorzoneria	bundle	1	6	0	0
Coleworts	dcz. bunches	2	0	4	0	Seakale	per basket	2	0	2	6
Cucumbers	each	0	4	1	0	Shallots .. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Endive	dozen	1	0	2	0	Spinach	bushel	2	0	4	0
Herbs	bunch	0	2	0	0	Tomatoes	lb.	0	6	1	0
Leeks	bunch	0	3	0	4	Turnips	bunch	0	4	0	6
Lettuce	dozen	1	0	1	6						



THOUGHTS FOR THE NEW YEAR.

WITH the dawn of a new year thoughts involuntarily crowd upon the mind; past, present, and future, useful regrets, hopes, and anticipations tempered by wholesome fears, all come and go as we pass in review the efforts and results of the year that is

gone, and strive to arrange our plans for the future in something like definite order. The stern teaching of experience tells us that however well and wisely our plans are laid, however energetic and persistent our efforts to give full effect to them, success full, perfect, and unchequered by failures cannot be reckoned upon; for in calculations of results in farm management we cannot forget that crops may fail, that animals may sicken and die. Granting this, we also know that by close attention to details, by the exercise of all possible forethought and care, and by judicious treatment, both cattle and land may be so managed that the risk of losses and failure is reduced to a minimum. As a means to so desirable an end we do well to remember past failures and the cause of them. The retrospect may not be a pleasant one, especially if it brings conviction to the mind that they were owing to some degree to ignorance or carelessness on our part, but taken aright such knowledge will have a wholesome healthy influence upon our future efforts and prove their best safeguard.

Among errors of management, overstocking the farm occurs to us now perhaps more forcibly than at any other season of the year, for grass feeding is practically quiescent except for sheep, and overstocked yards point to troubles next March and April when a cold late spring tells upon hay and straw stacks, and root heaps diminish with unpleasant rapidity. Only once has our supply of home-grown fodder run so short that we had to purchase more in spring, and we have never forgotten the lesson. Let us repeat here that heavy bills for corn, cake, and fodder spoil the balance sheet, and that is a matter which there is no shirking, nor indeed ought there to be. Profit and loss is the best because it is the only safe test in farming, and when a man's work will not sustain such test he can hardly hope to give satisfaction in these hard times.

Nor must the costly item of horses be overlooked, and we may well consider if any reduction is possible in the number of farm horses. It is true enough that during the full pressure of haying and harvest an extra horse or two is of much use, but afterwards when the land is cleared and the autumn crop sown, it often becomes difficult to find work for all of them. We are strongly of opinion that horse-breeding should receive more attention from farmers than it has had hitherto. A certain number of young horses broken to work yearly and passed through the teams for sale is a source of profit that is not lightly to be overlooked, and is one of the items in profitable farming to which greater prominence will probably be given.

The application of manures is another matter worthy of careful study. We must avoid the use of farmyard manure so far as is possible, and also avoid the patent nostrums of artificial manure merchants. We know that nitrogen, phosphorus, and potash are the only chemical elements which it is absolutely essential for the farmer to apply to the soil, and he must ascertain exactly for himself what is the minimum quantity of each element necessary to give a maximum crop. Then, by procuring the manures in a separate and pure form from a reliable source, mixing them at the farm, and seeing the mixture carefully applied, we avoid the wasteful expenditure so frequently incurred for the comparatively worthless mixtures of the dealers. Do not let us forget, however, that the enlightened scientific application of manures must be accompanied by drainage of the soil and its thorough mechanical division. Bare land, too, in the guise of summer fallows ought no longer to be seen. Green crops, especially of White Mustard, sown and ploughed in repeatedly during summer impart astonishing fertility to the soil, which is simply a medium for conveying food to plants. This ploughing-in of green crops is a pleasing example of the application of science to practice. Chemists teach us that about 90 per cent. of plant growth is derived from the air and rain; by ploughing-in several crops of the strong quick growth of White Mustard we impart to the soil all that is necessary for the food of heavy crops of corn and roots.

Grass land must also have its share of attention in our plans; drainage, improved herbage and manuring all must be done in the best way. There must be no waiting till March before sowing the manures; either this month or the next it must be done so as to ensure so far as we may the manures being dissolved and washed downwards to the roots of the plants before growth begins; then with the soil richly stored with all the necessary elements of fertility our grass growth will be strong, early, and abundant. We had ample and pleasing proof of this last summer in our heavy grass crops and big hayricks when complaints were so general of a short crop of hay owing to the spring drought and undissolved manures. Our thoughts have run on almost on the limits assigned us, and we refrain from dwelling farther now upon the numerous other matters worthy of a word of caution, and with an expression of hope that a

brighter and more prosperous time is opening upon farmers, we wish our readers and brother farmers—

A HAPPY NEW YEAR

A LOOK ROUND THE FARM.

SELDOM has New Year's Day witnessed a more flourishing appearance of the autumn-sown crops than now. Rye is wonderfully forward, and is so vigorous that we have more than once been tempted to feed it off, but have refrained, as there has been no real scarcity of food to render such a course advisable, and an early cut of Rye will prove of great service later on. White Mustard sown on land that the fine autumn enabled us to clean and plough and sow is quite ready for folding, and any that is not so used will be ploughed in for spring corn. This is a useful catch crop, useful for retaining nitrogen in the soil during winter as well as for the other purposes mentioned.

Winter Tares are short, sturdy, and strong, which is just how we like to have this crop now, and not for the plants to be so long as to recline upon the ground, for then there is much risk of loss and failure. We therefore do not sow it till October is well in, and consider early September sowing decidedly faulty.

Trifolium incarnatum is another good crop, the plants well covering the surface of the land. This crop was sown upon an Oat stubble, and the plants are thickly interspersed with a strong growth of Oats from seed shaken out of the sheaves in harvest. We tried hard to avoid this by having the Oats cut immediately after the corn had passed the "milky" stage and while the stems were green; but the hot dry weather ripened the corn so fast that some loss was unavoidable.

Winter Beans are full of promise; the plants have come up well, and the growth is strong and even. Winter Oats are also a good plant, thick on the ground, and sufficiently vigorous, with a deep green appearance, which clearly betokens the good effect of the autumn dressing of artificial manures. This is a favourite crop of ours for light dry uplands, coming as it does early to maturity, and always being available in a late spring for folding purposes, to which, however, we avoid turning it, unless much straightened for keep. Wheat looks exceedingly well, and, like the whole of the autumn-sown crops, gives the best evidence how favourable to farming the late dry autumn was. The land is so much softened by the heavy rain that horses are kept off it now, and we are carting manure to heaps near the land reserved for the root crops of next season. It will lay in these heaps till March, and not be carted upon the land, however severe frosts may be, for to cart it out into small heaps in midwinter is to risk the loss of much of its fertility.

AGRICULTURE IN NEW SOUTH WALES.—Some idea of the progress of agriculture in New South Wales may be inferred from the fact that the quantity of land under cultivation at the close of 1883 was as follows:—Wheat, 289,757 acres; Maize, 123,634 acres; Barley, 5081 acres; Oats, 17,810 acres; Rye, 1140 acres; Potatoes, 14,953 acres; Tobacco, 1785 acres; Sugarcane, 14,984 acres; Grape Vines, 4378 acres; Oranges, 7268 acres; sown Grasses, Wheat, Barley, and Oats, for hay, 178,503 acres; same, for cattle, 107,993 acres. Gardens and orchards about 17,455 acres, the whole quantity of land under cultivation considerably exceeding three-quarters of a million acres. A severe drought rendered 1883 an unfavourable year for cereal produce, notwithstanding which there were raised no less than 4,345,437 bushels of Wheat, 4,538,604 bushels of Maize, 106,496 bushels of Barley, 376,635 bushels of Oats, and proportionate quantities of other crops.

OUR LETTER BOX.

Tare Seed for Poultry (*Constant Reader*).—We do not remember receiving the letter to which you refer, but a similar question was answered in "POULTRY" a fortnight ago (but under initials) as follows:—"It is not a good sample; we have never tried Tare seed for poultry." It is used for pigeons, but not for fowls.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain	
	Barometer at 39s and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1884.											
December.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
Sunday	21	29.986	36.9	34.2	N.	40.7	40.5	34.4	57.8	31.3	0.010
Monday	22	30.236	37.7	35.9	N.	40.2	42.4	35.3	57.8	29.8	—
Tuesday	23	30.110	36.7	34.8	N.E.	39.8	41.2	35.5	48.5	32.8	0.018
Wednesday ..	24	30.117	36.2	33.8	N.W.	39.4	37.8	33.6	44.2	32.3	—
Thursday	25	30.017	35.2	34.0	N.	38.9	40.6	31.8	51.4	26.8	—
Friday	26	30.110	35.5	33.2	N.E.	38.6	36.5	32.3	42.3	16.6	—
Saturday	27	30.236	36.1	34.3	N.E.	38.2	38.0	33.4	38.3	32.5	—
		30.116	36.3	34.3		39.4	39.6	33.8	48.6	30.3	0.028

REMARKS.

- 21st.—Fine bright morning; dull afternoon; slight rain in evening.
- 22nd.—Lovely winter's day, but clouded over before sunset.
- 23rd.—Fair morning; cloudy afternoon; snow and sleet after 4 P.M.
- 24th.—Dull.
- 25th.—Bright early; slight snow about 9.30 A.M. dull afternoon; fine night.
- 26th.—Cloudy and cold all day.
- 27th.—Dull.

A cool dry week, with on several days a very small range of temperature.—G. J. SYMONS.



COMING EVENTS

8	TH	Royal Society at 4.30 P.M.
9	F	Quekett Club at 8 P.M.
10	S	Royal Botanic Society at 3.45 P.M.
11	SUN	1ST SUNDAY AFTER EPIPHANY.
12	M	
13	TU	Royal Horticultural Society, Fruit and Floral Committees at 11 A.M.
14	W	Society of Arts at 8 P.M.

THE SEASON OF 1884—CERTIFICATED PLANTS.

THE past season has been a busy one for horticulturists, particularly those who are in any way connected with the exhibitions which appear to be so rapidly increasing in numbers throughout the country. The season was opened in London by the Royal Horticultural and the Royal Botanic Societies' Spring Shows in March, and from that time until late in November there has been a constant succession of fruit and flower exhibitions, varying in importance from the Great International gathering at Dundee to the local cottagers' shows in small county towns and villages. Of special exhibitions there has been an unusual number; at South Kensington those devoted to fruit and vegetables have been extremely successful, while the Roses and Chrysanthemums have been extensively supported by their respective admirers. Many of the general shows held during the summer months have, perhaps, not been quite so satisfactory as would have been desired by their supporters; but there were several notable exceptions to these, particularly the Manchester Whitsuntide Exhibition and the York Gala, which were remarkable as usual for the large numbers of well-grown plants they brought together. In the south, the Southampton Show deserves especial prominence, but it is probable that Salisbury, which has resuscitated its Horticultural Society, will this year prove a strong rival for that town. At Dundee, which was a wonderful gathering in its way, the fruit and vegetables were the great features; but, admirably managed as the Show undoubtedly was, it was a source of regret to the majority of visitors that the building was so unpleasantly barn-like in its bare and unornamented walls. It detracted greatly from what was horticulturally a most successful exhibition. These international shows are frequent in the north, and are generally financially satisfactory, while the stimulus they impart to horticulture is considerable; but in the south we have not yet got beyond uncertain rumours respecting an exhibition of a similar character. The Parisians, however, promise us one of some magnitude and importance in May of the present year, and that will probably attract many English horticulturists.

The abundant gatherings of the past year have given most welcome indications of a strong and general activity in the horticultural world, which such meetings serve to still farther increase. Another important fact pointing to the continued and extending love for plants which form so large a portion of the nurserymen's trade, is afforded by the number of new plants introduced and certificated at the leading metropolitan exhibitions. That a total of over 330 plants should have been found worthy of being honoured with certificates is good evidence that the demand for novelties is far from decreasing, and that the efforts of raisers and introducers are in no degree relaxed. The great majority of these have been submitted to the consideration of the Royal Horticultural Society's Floral Committee, or the Judges at the Royal Botanic Society's Shows; a few have, however,

been exhibited and distinguished at the Crystal Palace, and some of the more important provincial exhibitions where experienced judges officiate, and whose decisions may generally be taken as of equal value to those of the Floral Committee. The special Societies also confer honours upon new varieties shown before them, and the National Chrysanthemum Society has in this respect set a good example in appointing a committee of experts to decide upon the merits of new varieties. The great difficulty now in all classes of plants is the selection of the really meritorious species or varieties from the hosts of claimants for popular favour. The system of awarding certificates, if judiciously and cautiously carried out, is in consequence of inestimable advantage to purchasers who have not the opportunity of seeing novelties when first exhibited. It moreover exercises a wholesome check upon vendors, and renders them careful to ascertain the merits of a plant before bringing it under public notice.

A glance at the number of certificated plants and the relative proportion of the different groups show us some rather interesting facts connected with their respective popularity. Taking them in two large groups, as arranged in the "Gardeners' Year Book," we have 126 plants and 205 florists' flowers—the former including species, varieties, and hybrids of stove, greenhouse, and hardy plants; the latter being devoted to the flowers, of which more or less numerous varieties have been obtained in cultivation. Of the plants, no less a number than seventy-one are Orchids—more than half the total certificated. This is remarkable, and shows a great increase over last year, when fifty-six were so honoured. It also appears still more extraordinary by taking a longer period into consideration. For instance, from 1859 to the end of 1871 the Royal Horticultural Society only certificated 250 Orchids, while from 1872 to 1884 the number was 262. Thus, in a period of about a quarter of a century we have had about 500 Orchids certificated, and the number this year is nearly one-seventh of a total of twenty-five years. It is further worthy of note that in addition to the certificated Orchids fully as many novelties in that family have been figured or described in various works or periodicals. No more striking evidence of the sustained popularity of Orchids could be required than these facts, and if some large collections have been sold there must have been some scores of smaller ones formed.

Of other classes of plants, it is strange that Ferns should appear in such small numbers, only eight having been certificated. The same remark applies to Crotons, which a few years since were so numerous, but which this year are reduced to four; while we have no record of a *Dracæna* being certificated. A few *Caladiums* have taken honours, but fine-foliage plants generally were not so abundant as usual, and the demand for flowering plants seems to be fast increasing. It is, however, unaccountable that Ferns should fall into neglect, for of all flowerless or "fine-foliage" plants these stand pre-eminent for gracefulness of habit. Perhaps we can scarcely take the certificate records as an indication of decreasing popularity in the case of the Ferns, for though comparatively few novelties have been brought forward by nurserymen the majority of useful and well-known species continue in demand.

Turning to the "Flowers," of which 205 have been certificated, we find marked partiality displayed for some kinds. Heading the list in point of numbers are the Tuberos Begonias, of which thirty-one have secured honorary awards during the year, and two-thirds of these varieties have come from one establishment. These Begonias are undoubtedly taking a foremost place amongst the most useful and showy plants of the day. In pots their value is fully proved, and their adaptability for beds is now becoming generally known, and will render the plants still greater favourites. Next in numbers to the Begonias come the Chrysanthemums, of which twenty-five have been certificated—probably the greatest number honoured in one season

since these plants were introduced. Fourteen of these are Japanese varieties, and furnish a good illustration of the popularity of particular groups of plants. Azaleas and Carnations have an equal position, fifteen varieties of each having taken honours, most of the Azaleas being of continental origin. The other groups of plants are represented by smaller numbers, though including some admirable varieties.

On another occasion a few of the most beautiful or useful of the plants in the several groups may be noted; for the present the foregoing general review will suffice to show that the demand for new plants is satisfactory and encouraging to those engaged in trade.

VINERIES, VINE BORDERS, AND VINES.

THE present is a good time for those contemplating the erection of new vineries to proceed with the work, and as there are annually new readers of the *Journal of Horticulture* to be instructed on all matters pertaining to gardening, I propose to assist those in need of aid by briefly indicating the procedure to be adopted.

The first step to be taken in this direction is selecting a suitable site on which to erect the vinery, or range of vineries. This should be in a central part of the kitchen garden and be well exposed to the south, the vinery running east and west, so as to have a due south aspect. If the ground on which it is determined to erect the vineries be moderately high—that is, 4 or 5 feet above the highest known level of the water underneath, the floor line of the house may be about 4½ inches above the ground line outside; but, on the other hand, should the situation be a low one, it will be necessary to raise the vineries sufficiently to admit of the base of the Vine borders being made about 9 or 12 inches above the highest known water line from the surface.

SHAPE AND WIDTH OF VINERY.—Experience tells us that a three-quarter or unequal span is the best shape for a vinery—that is to say, the most suitable house for the production of early, midseason, and late Grapes. This house should be about 17 feet wide (inside measurement), 10 feet high from the floor line at the back, 13 feet from the ridge, and 5 feet in front, including 3 feet of sash and plating, the latter 6 inches wide by 3 inches thick in the middle, thus giving an angle of about 30° to the sun. The front wall, 9-inch work, should be built upon arches turned from 9-inch piers at 4 feet from centre to centre, and the back wall should be 14 inches thick for the first 8 feet, the remaining 2 feet to consist of 9-inch work. A shelf can be fixed in the recess thus made. Concrete to the depth of 12 or 15 inches should be laid to foundations of all walls and piers.

None but well-seasoned Baltic fir of the best quality and free from knots should be employed in the erection of vineries and other horticultural structures. The sash bars, 1 inch wide and 2 inches deep, may be moulded, as also should the under side of rafters, which must be 6 inches deep, and 3½ inches wide on the top, to admit of a piece of wood 1½ inch wide and 1¾ inch deep being nailed thereon as a division to the roof sashes, and which, with the latter, should be covered with a board 3½ inches wide, seven-eighths of an inch thick, and having a double channelled surface for carrying the rain water into the cast iron guttering. The front roof lights should be 12 feet long, and 3 feet ventilating lights, in lengths of from 16 to 20 feet, which must be properly secured to the ridge capping by means of stout brass butts and screws. The lights forming the "hip-roof" should be 6 feet long, and like the 12 feet lengths, may be secured to the rafters by long screws, each light to consist of frame and three sash bars, having a half-inch iron traversal tie-rod through the middle for strength, and be glazed with 21 oz. glass in lengths of 3 feet. Previous to fixing the 12 feet lights to the rafters, two pieces of hoop iron, 1 inch wide, quarter of an inch thick, and 4 feet long, should be fixed edgeways in iron castings secured to the side of the rafters, the one at 3 feet from the bottom, and the other 6 feet higher, as bearers for the lights. A capping of 1½ inch thick board, extending downwards 4 inches on either side the ridge, should be secured to the latter, and to this a heptagon-shaped bar of wood, 3 inches by 2½ inches thick, should be fixed for supporting ornamental iron cresting and finials. The internal and external doors may be 6 feet 6 inches high, 3 feet wide, and be well framed, having sunk moulded panels, and be hung on stout brass butts. The external doors should be fitted with East's patent solid brass mortice greenhouse lock and furniture, and the inner doors with brass fastenings. I need scarcely say that the work should be well done, all

joints should be close fitting and have clean cut tenons, and the roof and wall plates should be morticed and pinned together at proper intervals.

The ventilators can be worked by machinery, the apparatus being arranged for opening the front sashes simultaneously in each compartment, and the top lights, which should shut down on the top of the 12 feet lights in two sections. The long and short, front and back rafters may be tied together by ornamental cast iron angle pieces, extending 2 feet 3 inches under each rafter, and secured thereto by means of four (two to each side) half-inch-thick square headed wood screws. In preparing the model for these castings, provision must be made in the ornamental, and at the same time strengthening part of the individual tie-beams, to admit of a 1 inch thick iron bar being passed horizontally through the entire number at 9 inches from the apex of angle piece.

PATHWAYS.—Cast iron grating of an ornamental character set in a wooden frame and resting on piers, is undoubtedly the neatest, best, and in time the cheapest kind of pathway to be employed in forcing houses, the next being that made of strips of well-seasoned Baltic fir, 3½ feet long, 3 inches wide, and 1 inch thick, nailed transversely, 1 inch apart, on three oak sleepers 4½ inches thick, and 3 inches wide, and in convenient lengths, say 12 to 16 feet, according to the length of the house to be thus furnished with pathway. The sleepers, which should be supported by brick piers at short intervals, and underside of trellis must be crested to resist damp before being laid down for traffic.

WIRING.—I consider the space of 16 or 17 inches between the glass and trellis amply sufficient for the development of healthy Vine foliage without its coming in contact with glass when the laterals are kept tied down to the trellis. The best way to wire a vinery is to secure 1½ inch wide and quarter inch thick iron hook-shaped bracket to the mullions within 9 inches of the rafters, with the hook facing outward, fixing longer but similarly shaped brackets to the hip rafters. Into the brackets thus fixed place, back and front, a length of hoop iron of the same stoutness and size as the former, and extending the full length of the vinery; then, beginning at 4 feet from the bottom of the rafters, fix three 12 inch long and half-inch thick screw eyes 3 inches into each of the 15 feet rafters at 4 feet apart, after which pass a half-inch thick iron bar through each set of screw eyes the entire length of the house. This done, obtain sufficient lengths (about 20 feet 6 inches long) of one-eighth of an inch thick, well-strained charcoal wire, to reach from the front horizontal flat bearer to the corresponding one at the back. Each wire must be furnished with a half-inch wide and quarter-inch thick hook, to be slipped over hoop-iron bearers, which should be fixed in the brackets flatwise, with the edge in a line with the angle of the roof. Connecting the wire and hook in front should be a screw-eye, 4½ inches long and a quarter of an inch thick, and swivel for the purpose of tightening and slackening the wires, which may be a foot apart when necessary. They should rest upon the series of half-inch thick iron horizontally fixed rods, but the full strain and weight of the trellis, when heavily laden with Grapes, will be borne by the 1-inch bar fixed in ornamental tie-beams, and the two hoop-iron bearers back and front. Vine trellises thus made are both neat and substantial.—H. W. WARD, *Longford Castle*.

(To be continued.)

CARNATIONS.

ALTHOUGH the present may seem to some a strange time to write about these charming summer flowers, yet to those acquainted with their requirements some remarks upon or suggestions as to their future management will not seem out of place, and in many instances the ultimate result will be materially affected by the forethought now exercised. In Carnation culture in the open ground a certain amount of forethought is essential, as all the ground intended for their reception should at once be defined and prepared. This is especially the case if a collection is grown, as an especial plot of ground in an open situation should be afforded, or a portion of a good border where the collection can be accommodated. If this is determined upon the preparation of the soil is an easy matter, the most suitable soil being a well-drained sandy loam fairly well enriched with stable manure. It is not my intention to rigidly prescribe a certain compost as absolutely necessary for Carnations, for such might cause some to despair of growing such charming and, in my opinion indispensable flowers. Mr. Cobbett once said, "For my part, as a thing to keep and not to sell—as a thing the possession of which is to give me pleasure—I hesitate not a moment to

prefer the plant of a fine Carnation to a gold watch set with diamonds; and upon the same grounds many enthusiasts enjoy the same high opinion.

Few positions are absolutely adverse to the well-being of Carnations, and even their number might be lessened by a certain amount of preparation, the result of which would be far more than commensurate with the trouble and cost involved. The most objectionable conditions are shade, defective drainage, and excessively retentive soil. Those possessing only such accommodation should consider the best means to modify it so as to ensure reasonable success, or not attempt their permanent culture; but secure a batch of fresh plants yearly, which if planted in April would most likely yield some good flowers. With ordinary well-drained soil the present necessary preparation is manuring and deep digging, laying the surface spit as roughly as possible. Previous to digging give a thorough dressing with soot, and when finished a second may be applied, the idea being to wage war with wireworms and other grub pests, at the same time some nourishment will be added. The quantity of manure need not be very great, neither should it be buried too deeply. Place it about half a spit deep, where it will be easily reached by the roots. Rather than apply manure too heavily reserve some decayed material for mulching the surface after planting in spring, which will serve the double purpose of materially assisting both plants and layers.

Generally, it will be better to defer planting until the middle or end of March in favoured or sheltered localities; in more exposed ones or on account of severe weather it will be advisable to allow them to remain until April. Some recommend autumn planting, and with certain varieties, such as the Clove and vigorous border sorts, it answers admirably, but this only in some places; in others their appearance is anything but happy when the winter is past. I have several varieties outside, but took the precaution in autumn of securing duplicate plants in a cold frame, where all the stock plants are now protected from any bad weather. They will be kept as cool as possible, abundantly ventilated, and only sufficient water will be given to keep the soil moist, while none will be allowed upon the grass. After planting they should be staked as evenly as possible to prevent the effects of the wind. During dry weather abundant supplies of water may be given, which with the mulching previously referred to will induce vigorous and clean growth and good blossoms, which, if required for exhibiting, must be thinned out and the pods seen to, in order to ensure even well-shaped flowers. As a rule, for such purposes it will be more expeditious to grow plants in pots, when they can be removed under glass before the buds expand, when flowers of a much finer quality will be produced.

VARIETIES.—My advice is, Procure the free-flowering hardy Clove and fancy varieties, of which there are now so many charming varieties. These are for open ground culture; but it is far from my intention to lightly regard the claims of the host of bizarres and flakes, many of which, however, are too high bred to acquit themselves satisfactorily under ordinary treatment outside. Many are vigorous, such as Dan Godfrey in the scarlet flakes and Lord Milton in the bizarres. Such as these should be grown in company with the self and fancy varieties; the majority are clove-scented and will form a most beautiful display. No garden can boast of too many of the rich crimson, scarlet, ruby, salmon, pink, and white selfs, to say nothing of the many other beautiful varieties which are now accessible to most garden lovers. There is no reason to disturb several of the selfs for years if the beds are once thoroughly established. I know some beds of the old crimson Clove and a white one which have not been removed for years; the plants are annually top-dressed with well-decayed manure, and sometimes layered, and what a wealth of bloom is yearly enjoyed. Some of us remember the grand bed of the old Clove which was a feature at Fulham in Osborn's time, a wonder in every way. The yellow ground varieties are very lovely, and as much appreciated, but unfortunately many of them are rather delicate, the winter being their most trying time, and most likely the greatest enemy is damp; but they are so charming that the care bestowed upon them meets with its own reward. They should be stored in a cold frame and be kept moderately dry through the winter. Happily we are now securing some varieties with a more robust constitution. Messrs. Veitch are sending out some new ones this season, I think, of which they give a good account in this direction. King of the Yellows is a good one of the older varieties which I shall never like to lose. Mr. Charles Turner's Lady Rosebery is very pretty, but as yet very scarce. This grower has, perhaps, done more than any other to encourage this section, including the yellow ground Picotees, many of the best having been sent out from the Slough Nurseries. It appears these were always more delicate than their congeners, for Hogg,

writing of them in 1832, says, "It is at all times a difficult flower to grow well in this country, on account of our moist atmosphere and long winters." The same writer says, "The late Queen Charlotte and the Princesses a few years ago had a very superb collection of yellow Picotees at Frogmore, which were obtained principally from Germany; they were the delight of all who saw them," and in Hogg's time they were said to be very plentiful in most of the gardens in Madeira in great and beautiful variety. Are they abundantly represented in the same island now?—T.

WHITE PLUME CELERY.

THIS is a new Celery of American origin, which is likely to become a favourite in our gardens. I had a packet of seed last spring from the raiser, Mr. Peter Henderson. At first when the plants were small they were quite green like any ordinary Celery, but when about a foot in height they began to become white in the middle, and by the autumn every plant had become what its name implies a "white plume."

It is rather curious to see every part of a Celery plant perfectly white, but this Celery has more to recommend it than being merely a curiosity. This is the least valuable part of it, its most useful points being easiness of culture and high quality. Everybody who grows Celery knows the labour attached to making trenches in the first place and subsequent earthing-up, which not only become expensive, but often destructive, as it is through being earthed up and the soil in many instances slipping into the centres of the plants that so much decayed Celery is produced in winter. Worms, too, are more destructive when the soil has been put up than it was possible for them to be before, and when no earthing up is required firm spotless Celery is the rule.

The White Plume requires no earthing up, as it blanches naturally without any assistance, and trenches are superfluous. Our plants were put out on the level as we might do Cauliflowers or Cabbages, and about the same distance apart, and they succeeded admirably. They attained a height of 18 or 20 inches, were very bushy, and had capital centres. It is very satisfactory when we can place out Celery plants in June or July, and have them all ready for use from November until spring without the slightest attention except keeping them free from weeds with the Dutch hoe. This Celery is certainly the most distinct of all, and, as I have shown, it merits culture for many good reasons. I see it figured in Carter's "Vade Mecum," and as it is offered by many of our English seedsmen in their seed lists of this year I have no doubt it will be generally tried, and I am sure it will give cultivators satisfaction.—J. MUIR, *Margam Park, South Wales.*

MANETTI AND MILDEW.

CANON REYNOLDS HOLE in his delightful "Book about Roses," just republished, quotes the oracular statement, made in 1868 by a well-known rosarian, that, "For general use the Briar is doomed; it is time to think seriously of discarding it." Substituting "Manetti" for "Briar," the oracle might stand for 1885. Not that Manetti will be discarded any more than was its rival stock in 1868, for this reservation can be urged in Manetti's favour, that it has "the horrid merit of convenience." It is very little trouble with a scateur to cut Manetti sticks into lengths, which, when inserted in the ground, are sure to root, making stocks that grow vigorously on transplanting, and on being budded, rapidly become large plants, whereas Briar cuttings, which refuse in some places to strike at all readily, must be made with knife, removing lower buds, and leaving if possible a heel; and the difficulty of keeping seedling Briars even moderately free from mildew during the long time which must elapse before they are ready to be budded is extreme. But the ultimate superiority of either form of the latter stock is again maintained by the following experience. In the autumn of 1881 there were planted on a piece of fair yellow loam, well trenched and previously manured, 400 Hybrid Perpetual Roses on Manetti, 170 Roses on seedling Briar, (seventy Teas), and thirty Briar cuttings (H.P.'s and Teas), and in case the land should prove too heavy for the Manetti, fifty H.P.'s on Manetti were planted on much lighter soil, with forty seedling Briars and sixty Briar cuttings (H.P.'s and Teas).

During the following autumn all of them made strong growth, and in 1883 gave fine flowers. In the autumn of 1883, however, about one-third of the plants on Manetti made only a very moderate growth, the remainder, and those on Briar, being as strong as before. In the spring of 1884 many of the weak-growing plants on Manetti died, but some seemed to recover and grew stronger again during the summer. During the past autumn many more Manettis made no growth, and the collection was thoroughly overhauled, with the following results. Of the plants on seedling Briar only two Teas were dead, while only three H.P.'s (Émilie Hausburg, Xavier Olibo, and Earl of Beaconsfield, not vigorous growers at any time) were so weak as to be thrown away, and on Briar cutting two Teas only were dead. But of those on the Manetti 200 have made room for their

bettors on Briars, and though some of what are left are very vigorous, those that are growing strongly are on their own roots, while all that were not on their own roots were moribund or dead, for the recovery of the weak plants, spoken of above, was effected by the scion throwing out roots of its own on the failure of the stock, and thus becoming established as an independent plant on its own roots, the plants that died being those that failed to effect this before the death of the stock. As an instance: A row of twelve plants of John Hopper was very weak, with the exception of four plants, each of which had four or five strong long shoots. On being dug up, all the Manettis were found to be dead or dying, and the plants that were alive were only just in proportion to the amount of roots which they had made at the collar; but in the cases of the four vigorous plants the Manetti was quite dead, and the plants were flourishing on strong bunches of roots of their own, some of which measured 18 inches in length. Of the varieties that failed, the first to succumb were the smooth wooded varieties, such as Victor Verdier, Comtesse d'Oxford, Marie Finger, Etienne Levet, Reynolds Hole, Duke of Edinburgh, Dupuy Jamain, Louis Van Houtte, Alfred Colomb, Madame V. Verdier, and also Lord Macaulay, Prince C. de Rohan, Sir Garnet Wolesley, Madame H. Jamain, and A. K. Williams. Of the last mentioned variety, out of twelve plants on each stock, only one on the Manetti is left alive, while on the Briar only one is dead, and when transplanting the maidens this year, five "fell out" on the Manetti to one on the Briar.

Why not go a step farther than the suggestion lately made to transplant A. K. Williams in the dormant bud, and planting Briar stocks where the plants are wanted, bud them *in situ*, and not transplant at all? The Hybrid Teas, La France and Cannes la Coquette, appear to do equally well on either stock, and with the following are the best of what are left of those originally on Manetti—Camille Bernardin, Comtesse de Serenye, Madame Lacharme, Gloire de Bourg la Reine, John Bright, Madame G. Luizet, Maréchal Vaillant, Baron de Bonstettin, Baroness Rothschild, and Jules Margottin. A bad attack of orange fungus affected the plants on all stocks alike in the summer of 1883. No permanent injury, however, appeared to result from the visitation, the growth in the following spring being healthy, and this pest does not seem recurrent like mildew, hardly any trace of it having been noticed since. But an article from Mr. Worthington Smith on *Coleosporium* and *Peronospora*, as a supplement to his able "life" of mildew, would be very interesting. Of the Roses on the light soil almost every one on Manetti was dead or dying last year, while more than three-fourths of the Briars are still flourishing.

At a spelling bee some time ago, a rustic, who was asked to spell February, commencing his attempt, F—a—v, the remainder of his etymological essay was lost in a general burst of merriment, and but for fear of a similar catastrophe, since one cannot write in a whisper, an inclination might be admitted to spell mildew—well, beginning with an M, but going on quite differently. At any rate it seems odd that no one has insisted more, in the recent correspondence on the subject of mildew, on the reasons for certain modes of treatment advocated by some of the best authorities, for it seems clear that the mildew, when in the state of spores, may be regarded as an exceedingly finely divided powder or dust—so fine, that when once disturbed it will be long before it settles, and, while thus suspended in air, liable to be blown about by every gust or breath of wind, or even by the sweep of a passing skirt (for where there are Roses the ladies will come). Now the best way to prevent dust rising is to water the dusty surface, and when dust is once disturbed and is floating in the air, nothing clears away the cloud of suspended particles like a breeze blowing steadily from any one direction. Therefore, dealing on this principle with mildew dust, the surface of Rose beds should be prevented from becoming dry by syringing or watering, and Roses should be planted in situations where, unsheltered by trees or close hedges, fresh breezes may readily dissipate any cloud of spores that may be hovering over the Rose trees.

Since twenty or thirty hours is the longest possible term of the existence of mildew spores after their release from the pycnidium or from the perithecium, if they do not encounter a Rose leaf on which to weave their mycelium web, it would be reasonable to suppose that the above conditions, carefully maintained, would not only check the spread of mildew in a collection of Roses, but would ultimately exterminate the pest; and that this view is supported by the cases recorded in which mildew has been successfully resisted the following extracts from recent communications to the Journal on the subject show. On page 503 (last vol.) Mr. A. Young states that Roses which had been mulched and watered were free from mildew, while others left dry were attacked, and gives it as his experience that on Roses

mulched early and watered very little mildew will appear. On page 528, in his interesting letter on the subject, Mr. Bardney records his opinion that "dryness at the roots is a certain cause of mildew," and perhaps in still hot weather "surface" might be read for "roots." At any rate, his next statement, that "sulphur and all the mildew annihilators would prove of no avail in arresting its progress or freeing the plants as long as the cause of the mischief is in a deficiency of moisture in the soil," will be readily credited by all who have realised the enormous reproductive powers of mildew, and the subtlety and vitality of the innumerable conidia. Again, on page 572, "A Thinker" mentions Roses which in a high and exposed position had no speck of mildew, while plants in a dell near by were "white as a miller's hat." And though it has been shown that remedies applied in solution with the syringe are more effective in checking the spread of the fungus than palliatives administered in the dry, like sulphur, still how far the benefit is due to the dust-laying properties of the liquid may perhaps be questioned. Once more, taking the converse, it would be expected that mildew would spread most rapidly in still weather, and in connection with the prevalence of the fungus in 1884, note should be made of the very remarkable absence of wind during the past season, scarcely a high wind having been experienced during the summer and early autumn. Now if it be expedient, in order to avoid the spread of mildew, to keep Roses watered and growing in exposed situations, and plants worked on Manetti are thus treated, the result will probably be that the fine fibrous roots of this stock will become decayed, and gradually die, until the plant's hold of the ground is so relaxed that it cannot stand upright against the wind without a stake.

So it would seem that, on strong soil at least, cut-back Rose trees on Manetti must be either mildewed or moribund, while plants on the harder-rooted Briar, rejoicing in the watering and breezy situation that kept them free from the fatal conidia, root into the soil to the defiance of anything short of a gale. Therefore, while it is not to be concluded that the discarding of Manetti as a stock will effect the disappearance of mildew, still it seems more than probable that the prevention of the spread of this troublesome fungus may be more easily effected when dealing with plants worked on the Briar. As to the origin of the pest, beyond that it seems encouraged by sudden variations of temperature but little seems generally known; nor will much information of value be obtained unless experiments are based upon a careful study of the morphology of *Erysipheæ*. But that some rational mode of treatment, grounded on a knowledge of the laws of fungoid growths be clearly set forth, is a "consummation devoutly to be wished," lest other rosarians should despair, like a grower who, vanquished by mildew, tries to justify his desertion of Roses for Dahlias, in a parody of the opening scene of George Eliot's "Spanish Gypsy:"

"The Journal's finished reconitring then?
We shall hear news: they say it means a sally—
Would strike Queen Rosa's foes ere they push home
Like ants with egg-spores heavier than themselves;
Then, joined by other growers with their fads,
Lay siege to mildew. Cultor, What say you?
'Nought, I say nought. 'Tis but a toilsome game
To bet upon that feather mildew-spore,
And guess where after twice a hundred puffs
'Twill light on any Rose leaf crossing it:
Guess how the south-west wind will blow, and how the east
What draught my lady's gown makes; how a cough
Seizing the gardener's throat may raise a gust,
That on Queen Rose may sigh the feather down.
Such hatching out mycelium-white threads,
Such spinning Mushroom-spawn is not for me.
I shall give up that game; I'll rather bet
On Dahlias,—the large, show, lumbering Dahlias—
Earwigs up, and high stakes;—a plant sublime,
No need to dress it, pure rotundity!"

—THETA.

THE GOLDEN ELDER AND PURPLE FILBERT.

AMONGST ornamental deciduous bushes these are almost unique in their distinct and attractive foliage. No Cloth of Gold Pelargonium or any other plant or tree is more golden than the Elder, and the Filbert surpasses the Purple Beech in the intensity of its rich colour. Wherever effective foliage is desired in parks, pleasure grounds, or small gardens, they should be introduced. In extensive spaces they may be formed into groups, or they may be planted in mixed shrub beds and borders everywhere. Few people know better how to arrange shrubs for effect than nurserymen who study their culture and the impression they are likely to make on visitors, and in the best efforts in this direction I have invariably noticed the Golden Elder and Purple Filbert introduced with marked success. They are very hardy; so much so that they may safely be planted in all parts of the country. They grow quickly, and submit to

be cut and confined in the form of dwarf bushes, or they will run up to a height of 10 feet and 12 feet in a few years.

They are not expensive, as a dozen of them may be bought for the same price or less than single specimens of some Conifers would cost; but their value must not be judged by this, as they are surpassingly beautiful in the foliage. The present is a good time to plant them, and they may be shifted as long as the growths have not advanced much. Of the soil best suited for them I need say nothing, as they may be successfully grown without making any special preparations.—M. M.

MAXILLARIA.

THIS genus, although now relieved of many of the species that formerly swelled its ranks, is still a large one as regards both the number of the species and of the varieties. Unfortunately the majority produce only small flowers, and consequently cannot be recommended to the notice of an amateur in such a limited number as here selected. Some, nevertheless, deserve to be in every collection; and when the fine kinds which are still unknown in our plant houses shall have been brought home in



Fig. 4.—*Maxillaria venusta*.

a living state, the genus will, I am sure, become much more popular amongst Orchid growers than it has hitherto been.

Maxillarias are extremely easy to grow. They should be potted in fibrous peat and sphagnum moss in about equal parts, and require an abundant supply of moisture both to the roots and in the atmosphere during the growing season, but less will be required afterwards. They should not, however, be subjected to a severe period of drought.

M. VENUSTA.—Who does not love white flowers during the winter? None of my fair readers will answer in the negative, I am sure. Well, in this plant you have a perfect gem. The flowers are borne singly upon long scapes; they are very large, pure snowy white, bearing two blotches of crimson on the lip. The flowers appear about November, and continue to grow up from the base of the pseudo-bulbs for about two months; and as they last in their full beauty either upon the plant or when placed in a vase in the drawing-room, they cannot fail to please even the most fastidious. The plant is a native of New Grenada.

M. LUTEO-ALBA.—A fine handsome evergreen plant, with stout pseudo-bulbs and broad dark green leaves. The flowers in the best variety are very large, they stand erect upon short scapes, the ground colour being creamy white suffused with blotches of tawny orange. Its flowers are produced in great abundance during spring and early in summer, and frequently again towards autumn.—E. C.

A POOR NECTARINE.

GREATER fruitists than I may aspire to be could rightly affix the stigma of the above heading to a Nectarine of ill deserts; but from my experience with divers varieties of this gentle fruit I should never have applied the term "poor" to Rivers's Lord Napier. The raiser's name is trusty for a fair opinion, and though I have not just now at hand his book, "The Orchard House," yet I think he therein speaks of Lord Napier as one of the seedlings in which he had always felt confidence and pride.

With me it is great and good, a fruit beautifully and softly marbled with red and primrose, deliciously scented outside and flavoured within; but pale green fruits of it, if born to a position of poverty as to sun and air, are—as in what case not—of a watery and tasteless nature. However, I have never forced it or any other. I only afford these fruits glass enough to secure a certain, not an early, crop. I do not know that I grow them under all the most advantageous circumstances, and therefore I am the more emboldened to say a word for Napier.

Our Peach and Nectarine trees form the summer crop of the south front Auricula houses. They are kept to pyramids of 3 to 5 feet high in pots; and from the beginning of November till the pink appears in the downy bud cases I plunge them in the coldest part of the garden. Hence, I have no splendidly established trellis trees; but from the very dependency of all plants under pot life that cannot safely be left to take pot luck, so to say, the Peach and Nectarine trees get from me very much of the same love and constant watchfulness that favourite florist flowers do.

Thus the trees have all fulness of light and air, and are constantly turned about, so that no fruit is condemned to perpetual shade. The very exigencies of their case demand regular care as to ventilation, watering, top-dressing, stopping of shoots, cleansing from insects, and renewal of soil—all vital points of culture—and so they have risen with me to the estimate and position of favourite plants, Lord Napier, the most grown of any one variety, and never a poor Nectarine. These plants are twice beautiful in the year, and always interesting. Napier is a handsome large-flowered kind, paler than any I have except Rivers's White. I wonder if Mr. Muir has it true—an easy matter to secure—or whether, as all rules have exceptions, his situation may happen not to agree with this freely fruiting generous sort. If it should be so, the blame lies not upon a pleasant fruit.—F. D. HORNER.

CULTURE OF GLOXINIAS.

GLOXINIAS are now becoming very popular plants, as they are very useful for general decorative purposes. By judicious management plants may be had in bloom the whole year round. They may be propagated from seed or from the leaves. The latter are inserted whole or cut into pieces round the edges of well-drained pots filled with light soil, or they may be placed close to the surface, the midrib being cut through at various places, when each piece will form a plant, which should be placed singly into small pots and grown on as will be advised for seedlings. Seed should be sown early in January to produce plants for flowering in July and August, or in the middle of April for flowering during the autumn and winter months, and in July for spring blooming. The earliest flowered plants if potted when starting into growth and grown on will also bloom during the early spring months, and with another batch later on, up to the time the earliest plants commence flowering.

The seed should be sown in well-drained pots or pans, the soil to consist of equal parts of finely sifted leaf soil and loam, with a good addition of sand. It should be pressed into the pots rather firmly, and made smooth on the surface. The seed must be sown thinly, just covered with fine dry sand, and receive a gentle watering. Cover the pot with a piece of glass, and place it in a shaded position in a moist heat of 65° to 70°. Care must be taken not to let the surface soil become dry, or the seed will fail to germinate. With proper attention the seedlings will soon appear, and after they have grown a little let them be exposed to light, but no direct sunshine, as the Gloxinia is a shade-loving plant. When the seedlings are large enough to handle, prick them off into well-drained pots or pans, the soil to be the same as that the seeds were sown on, but with less sand. As soon as the plants touch each other transfer them into small 60-sized pots, the soil being in a rougher state, which should receive the addition of a little peat. The plants must be grown on in a moist atmosphere at 65° to 70°, or higher with sun heat, to be shaded from direct sunshine, not to receive any water over the foliage, and the ventilation to be regulated according to the weather.

The plants which are from seed sown in January are grown for flowering at the time formerly stated, while a few from the April sowing are grown for autumn flowering, and the rest we place in a cold frame after they are established in their pots for the winter. Whilst in the frame water must be carefully supplied, ventilation is freely, though carefully, regulated, and they are shaded from bright sun. Early in September, or later if the weather is favourable, we place them in a warm house, and winter them in a night temperature of 60°, in which they bloom freely. The plants from the July sowing are grown carefully in the same temperature through the winter months.

The compost we use at the repotting is two parts light fibrous loam, one part peat, and one part leaf soil, with the addition of some silver sand and charcoal. Water must be carefully supplied until the plants are rooting freely into the fresh compost. Give them a light position, shade from bright sunshine, and do not place them too far from the glass. After the plants have rooted well into the fresh compost a little Clay's or Standen's manures sprinkled occasionally on the surface of the soil is a great assistance. As the plants cease flowering those which are worth keeping for growing on are gradually dried off, and rested in a temperature of 50°, to be repotted as soon as growth commences. It is a great mistake to place the corms when at rest near hot-water pipes.—A. YOUNG.

NOTES ON ORCHIDS.

CYPRIPEDIUM SEDENI.—This superb hybrid is very useful at this season of the year, especially as its flowers are produced successively over a good space of time. The flower spike is branched and produces its flowers alternately along the stem, and before one is over another is produced. The flowers in colour are rather striking, whether seen upon the plant or in a cut state in vases. The sepals are greenish white, the petals being twisted towards their extremity, and in colour are white edged with purple, while the lip is rich crimson and shaded with purple. This Orchid grows well and increases in size more quickly than many varieties when grown in a warm structure. It appears to succeed remarkably well during the winter in a temperature ranging about 60° at night, with a rise by day of 5° or 10° when the weather is mild. During the summer the night temperature should be kept at from 70° to 75°, with a rise by day of 10° or 15° from sun heat. For a time this Orchid may when in flower be employed in the conservatory, although I would not advise it remaining in that position the whole of the time it is in flower. A few weeks in this structure, however, proves beneficial to the plant, for it grows afterwards with increased vigour. It should be grown in a pot or pan nearly three parts filled with drainage. It will be found to succeed admirably in a compost of fibry peat and living sphagnum moss and lumps of charcoal used freely, or broken crocks. The moss should largely predominate, for I have found it succeed best when nearly two parts of the potting material has consisted of moss. This plant should be well elevated above the rim of the pot or pan in which it is grown, so that its roots can pass over the hole and cling to the pot. Care must be taken to keep the material about its roots sweet, or it will not long remain in health. While growing liberal supplies of water should be given; in fact the material should never be allowed to become dry. If used in a cool temperature while in flower keep the plant rather dry, and by no means apply cold water to its roots. The water used should be tepid, and under all circumstances not lower than the temperature of the house.

MAXILLARIA GRANDIFLORA.—Although this thrives admirably in the moist cool atmosphere of the *Odontoglossum* house, I have hitherto found it succeed better and increase in size more rapidly when grown under warmer conditions. Up to the present time I have grown it in a house containing some *Dendrobiums*, *Cattleyas*, *Cypripediums*, *Oncidium*s, and others where the temperature at night ranges about 58° to 60° from October to the beginning of March, and during the summer months 65° to 70°, with a rise of 5° or 10° by day according to the weather. Although grown under these conditions it must for a time after the completion of growth be placed for at least a few weeks in the *Odontoglossum* house, where the night temperature ranges from 45° to 50°. After resting it is brought into the higher temperature, and then very soon produces its fragrant flowers and shows signs of commencing growth. It may be mentioned that unless it is placed for a time under cool conditions that it appears impossible, however dry at the root it may be kept, to induce it to rest completely and thoroughly, which is not only necessary in order to retain this plant in perfect health, but to insure its flowering freely. When kept under warm conditions it no sooner completes its growth than it shows signs of again starting into activity, which in a very short time would thoroughly exhaust it. The foliage when the plant is in health is dark green and about a foot in length, while the pseudo-bulbs are rather flat with sharp edges. The flowers are produced from the base singly upon a short scape, about 6 inches long, much after the style of *Lycaste Skinneri*. The sepals and petals are pure white, while the lip is dark purple towards the sides, with a yellow blotch in the centre and white towards the base. This variety is well worth growing in any garden where choice sweet flowers suitable for cutting are appreciated during the winter.

This *Maxillaria* may be grown in a pot half filled with drainage and potted in fibry peat and small lumps of charcoal. It will do very well in a mixture of peat and moss; but as the

latter decomposes rapidly the former is used with a good layer of living sphagnum on the surface, which can be removed annually without disturbing the roots of the plant oftener than when the peat fibre is decomposed and requires to be renewed. This plant evidently enjoys a surfacing of moss, for it becomes annually filled with roots. The peat fibre should be pressed in as firmly as possible and the plant raised above the rim of the pot. During the season of growth the supply of water must be liberal both to the roots and in the atmosphere. After growth is completed no more water need be given than will be sufficient to keep the pseudo-bulbs plump. During growth moderate shade should be applied, but afterwards light and air must be freely admitted to mature the growth, or it may not flower so satisfactorily as might be desired.

PILUMNA (TRICHOPILIA) FRAGRANS.—This deliciously fragrant Orchid is not grown nearly so much as it deserves, for its delicate pure white flowers could not fail to prove acceptable to the most fastidious during the winter months. This Orchid is often grown in too high a temperature, and consequently fails to be satisfactory. It will succeed very well in the cool house with *Odontoglossums*, and I would prefer growing it in this structure to subjecting it to stove treatment the whole year round. It succeeds admirably grown with *Cattleyas* and *Oncidium*s during the summer; in fact is subject to the same treatment as *Maxillaria grandiflora* as regards heat. Directly the growth is completed it is removed to the lightest and warmest part of the house in which *Odontoglossums* are grown, and arranged as close to the glass as possible. Under these circumstances it matures its pseudo-bulbs thoroughly. The length of time the plants remain under this treatment depends upon the time they are wanted to flower, varying from one to three months. As soon as the plants are re-introduced into the warmer house their flowers are soon visible at the base of the pseudo-bulbs, this very often being the case before they are removed from their resting position. Their plants should be grown in pots liberally drained, and in a compost of peat fibre and small portions of crocks or charcoal. These plants can also be grown very successfully in baskets suspended from the roof. In potting they should be well elevated on account of their flower spikes, which are very much inclined to droop. During the growing season—that is, when in active growth—a good supply of water may be given at their roots; but even then it must be given them with judgment. Great care must be exercised in watering during the resting period as well as during the completion of growth, and again for some time after they start into growth. During these periods no more must be given than is sufficient to keep the pseudo-bulbs plump. The most careful and judicious watering must be practised, for if too much is given during the time indicated, or even in any stage of growth, this plant will not long remain healthy.

P. nobilis is perhaps more beautiful than *P. fragrans*, and is well worth growing. *P. nobilis* requires the same treatment exactly, but has larger flowers with a blotch of yellow in the lip. Four or five flowers are produced on each spike, and this species is equally as fragrant as the above.—SCIENTIA.

TRENCHING GROUND.

WHEN I penned my remarks under the heading, "Is Trenching Always Judicious?" I certainly wondered what "A Thinker" would have to say upon the subject. In fact, I should have been disappointed if he had not taken the matter in hand, as, in spite of the "twaddle" which the Oxford card asserts accompanies his thoughts on paper, I still think he is most competent to separate the good from the bad wherever he turns his attention. I regard him as a sort of safety valve, now become quite indispensable to the *Journal of Horticulture*, his proper functions being to indicate where any of us would-be authorities are inclined to go too fast.

What I wish to impress on my readers is the necessity for better and more intelligent surface culture, as opposed to deep digging. As I have previously admitted, there are soils and gardens that may be improved by trenching, but in many cases there is little or no necessity for it, and there is a possibility of much harm accruing from a reckless hunt for this "gold mine." There is gold to be found, but it lies near the surface, and by surface I mean a depth of about 12 inches. Market growers have in times past found gold at a less depth than that, or say no deeper than a plough will go, and excellent crops are grown at the present time under the same treatment, though I am sorry to say the profits are now very small indeed. Strange to say, I have never worked in a garden the soil of which was naturally light, nor has trenching been much resorted to with one exception, and in this case much more harm than good resulted from it. Yet we had always seemed to have vegetables and fruit equal to the majority of places. Consequently, I am justified in repeating that there is much less necessity for trenching than many seem to think. Mr. S. Chinery, on page 572, mentions having practised trenching during forty-five years, and his father did the same before him; but this merely

proves that the practice is time-honoured, and it does not follow that it is indispensable. We plant Strawberries on ordinarily dug ground, but otherwise treated them similarly to Mr. Chinery's method, and better crops would hardly be possible. Again, in the Rectory garden near here a new Strawberry bed was formed on an untrenched ground, the surface being well dressed with bonemeal, and although only divisions from old plants were put out these yielded splendid crops of fruit during the summer following. Tomatoes planted at the foot of a warm wall, and also manured with bonemeal, produced a wonderful weight of fruit; and I could give a whole page of facts in the same strain.

I contend that in the case of all clayey or heavy soils we should spend more money and labour on the surface soil, and not attach undue importance to the efficacy of trenching. If labour is available then dig and redig the ground, keeping the solid manure for the second turn and the artificials for planting time, and this thorough pulverisation and mixing will serve to bring out the "gold" to a surprising extent. As a rule, the surface is dug up roughly, a moderate frost or only wind or rain breaks down the most exposed lumps, and a fine surface is easily secured. Directly underneath may be found large lumps of soil, which perhaps have previously been trampled on in wet weather, and these remain hard the whole season, in this state affording no root-run or food for the plants. Better not dig the ground at all than attempt to crop it under such poor treatment. Now the ground that is trenched is generally in a quarter purposely kept clear, and as trenching is usually done in dry weather the process thoroughly breaks up the ground to a good depth, this easily rendering it of superior fertility to the badly managed ordinarily dug ground. It is the finely divided, well-manured surface soil that should be secured, and then any kind of crop will do well.

What "A Thinker" adduces concerning the wonderful results of trenching in a garden he could point out does not greatly support his argument, and the conclusion I at once arrived at was that the garden had yielded but little during the three previous years. The season of 1884 was also highly favourable to our garden. During the three previous seasons we experienced a great difficulty in establishing our crops, but in 1884 the ground was thoroughly warmed to a good depth and everything grew well. If "A Thinker" can prove that trenching would render our ground drier and warmer, or would improve its working, I will readily admit I am altogether mistaken in my views. The garden soil here has been cultivated upwards of a century, yet the top spit works badly owing to its clayey nature, and to bring up more clay only serves to make matters worse. In our case I feel certain a deep root-run is not necessary for vegetables, and is positively injurious to fruit trees. I consider "A Thinker" a little wide of the mark when he asserts that deep root-action is brought about by the "speedy deprivation of moisture and sustenance from the mere surface soil." It is not the deprivation of moisture so much as the poverty of the surface soil that is to blame. Digging about the trees is also another evil practice, and should be avoided as much as possible. The roots are either driven downwards or attracted by manure, and doubtless moisture; but if the surface is properly treated it will contain in itself sufficient to retain the roots and support the tree. Long fibreless roots are more conducive to rank growth than they are to fruitfulness, and in this case whether the trees are "nibbled and slashed at," or allowed to grow unrestricted, they will not be properly remunerative. I have frequently left long stout branches on deep-rooting trees, and these in due time produced fruit to their full length, but the quality was always lacking; neither does the fruit keep well from such trees. Let me have the top spit full of roots and few or none in the subsoil. Where are the roots of Mr. Haycock's trees at Barham Court? and can anyone inform us in which spit the trees at Holme Lacey are established?

In these gardens there are numbers of well-trained Pear trees, principally on the walls, but of late years they have produced fruit of very inferior quality, owing, I maintain, to their being too deeply rooted. The remedy lies in partial lifting and root-pruning, but have I made a mistake in bringing as many roots as possible much nearer the surface and placing them in fresh loamy soil and manure with the idea that plenty of fibres would follow and the trees be greatly improved thereby? Many of these trees were rooting deep enough to please anybody; but why was the fruit they produced of so little value? On an outer wall the trees were in a much better condition, scarcely any roots having penetrated through the, in this case, unbroken subsoil, and all these trees wanted was the removal of a few coarse Conifers near and a liberal dressing of solid manure and bonemeal. Nothing had been done to keep these roots so near the surface, and fortunately nothing had been done to tempt them downwards, and for years the produce has been superior to that obtained from the apparently more favoured inside trees. A deep root run may be desirable for fruit trees, but I am far from being convinced that it is so, and "A Thinker" must advance stronger arguments to support his ideas. For instance, can he point to any experienced market grower that has trenched a few acres of land especially for fruit trees, or has even broken up the ground two spits deep just where the trees are planted?

In fruit culture two great mistakes are often made—that is to say, we plant too deeply, and later on overlook the fact that trees are as certain to impoverish the ground as any other crop. In planting, it is in most cases advisable to plant slightly above the level, mulching with rough litter or manure for at least two seasons to prevent undue dryness before the trees are well established, and thereby keep the roots spreading in the fertile surface soil. Here they are within easy reach of a dressing of any kind of manure, and which they ought to have at least once a year in common with any other crop. Surely this is not an impossibility. When I

asserted that 90 per cent. of fruit trees are ruined by deep root-action I made a blunder; I ought to have put it 90 per cent. of those planted in private gardens. Market growers treat their trees better than do the majority of private gardeners, the latter, however, not being always to blame in the matter. If the ground must be closely cropped, or if manure be scarce, the gardener must not be blamed if the fruit trees suffer accordingly.—W. IGGULDEN.

THE FRUIT AND VEGETABLE MARKETS OF LONDON AND PARIS.

At first sight it would appear that there is nothing whatever to be said in our favour in such a comparison as this. Who has not over and over again lamented over the abominations of "Mud Salad Market," and has deplored the manner in which the horticulture of England is there represented? and then been told, "You should see Paris; go to the Halles Centrales, and there you shall see what you shall see, and come home crestfallen at the reminiscence." Well, I am not going to uphold the wrong doings of Covent Garden, although much of it is inevitable. To remove it would seem to be as difficult as to substitute anything for Billingsgate, but at the same time there are things to be taken into account which are oftentimes not included in the reckoning, and which I think it is unfair to leave out.

The chief thing that we have to bear in mind is the very different tastes of the two peoples. That the French eat more vegetables all through the year than we do is true, that they are also larger fruit-eaters is also the case; but these things are perhaps more owing to the influence of climate. The inhabitants of Marseilles or Toulon would consider the Parisian, in the matter of animal food, much as he considers us; while we know the "No, I thank you" with which a salad is greeted in the depth of winter at an English dinner-table as if there were really poison in the cup. It may be prejudice, it may be instinct, but battle with it as you may it still remains in full force. So, again, how little attention is paid to a dessert in England in the winter. Two or three Grapes or a slice of Pine Apple may be eaten, but the most tempting Pears or the brightest Apples will be passed by unheeded; on the other hand a Frenchman, even at the cheap restaurants of the Palais Royal, must have his little bit of dessert. Then, again, there are differences in taste. You hardly ever see a good root of Celery in the Paris market, never a stick of Rhubarb, and I never—which to me is most surprising—saw Seakale either good or bad, and yet all fancy that it is a very delicate and delicious vegetable.

The Halles Centrales, so much vaunted by those who despise "Mud Salad Market," as Mr. Punch facetiously calls Covent Garden, contains markets of all descriptions—meat, fish, poultry, butter, &c., and amongst them a large portion devoted to fruit and vegetables. I have seen it at various seasons, and one cannot fail to notice the many different character of fruits and vegetables exposed for sale to what one sees at home. Salads, of course large, predominate; long-shaped Turnips and round Carrots rather interfere with our notions of these vegetables. In last September there were large quantities of a vegetable which we see occasionally in Covent Garden—the purple Aubergine. I do not think that we have any very great loss in not growing it. We had them one day at the Louvre—"Aubergine farcies." The centre seemed to have been taken out and filled with mince, but it reminded me very much of a Pumpkin pie a Canadian friend once made for us. There were so many good things put into it that the native might have been anything; it was very good, but it seemed as if the Pumpkin had been forgotten. Large bundles of Barbe de Capucine, which is very much used in Paris in winter, but of which it is almost impossible to procure even the seed in England. Cardoons and Salsafy, with us very uncommon, are very largely used, some people are very fond of them. Artichokes, again, are seen in large quantities, and are much more appreciated abroad than with us. They are eaten as with us, but with melted butter, or cold with vinegar and oil. But in no vegetable is perhaps the difference more to be seen than in Mushrooms. Go when you may into the Halles at any season of the year you will see large heaps on the stalls of the beautiful white Mushrooms, which are grown in the caves at Montrouge. Compare these healthy-looking heaps with the small baskets at 1s. or 1s. 6d. in Covent Garden Market, and it at once points to a difference in the style of cookery of the two nations. Into many of their made dishes the "Champignon" enters largely, and even in the cheaper restaurants of Paris large quantities of them are consumed, and the wonderful caves which underlie part of the city have been, as we all know, vigorously utilised for growing them. Another vegetable which is grown and used much more extensively in France than with us is Asparagus. We are now tolerably familiar with the giants that are grown in the neighbourhood of Argenteuil, as it is exported in large quantities to England, especially during the earlier part of the season. I am heretic enough not to admire it; it is doubtless very delicate in flavour, but there is comparatively speaking little of it that is eatable. I very much prefer our English Asparagus, where one-half or more of it is useable, and where, although you may not get so delicate a flavour, you certainly get more of the true Asparagus flavour. It must be so, for all this is blanched, and consequently does not get the benefit of light and air. That Asparagus can be grown according to the French method in England we have abundant evidence during the past few years, but I question very much whether popular opinion will favour it, and if not I have no doubt we shall still continue our old method of growing and cutting.

Passing from the vegetable to the fruit departments of the Halles, let no one imagine that they will see there anything like the display that

is to be seen in the central avenue, Covent Garden, nor do I either recollect in all Paris a fruiterer's shop "pure and simple." Those which have the finest fruit, such as Potil and Chabot or Chêvets, besides the vegetable and fruit, have displays of game, venison, "comestibles" of all sorts. There is not in all Paris such a shop as Solomons or Webber's. When I was there in September it was of course the height of the fruit season. There were quantities of Grapes, Peaches, Figs, Pears, Walnuts, &c.; but let it not be supposed that these were all of first-rate quality. The Pêches de Montrcuil were then at their height, and very delicious they were, intensely dark in the colour of their skin, as if they had imbibed the full splendour of the French sunlight. These were to be had, the finest at about 4*d.*, others at 3*d.* and 2*d.* a piece. I need not say that no such opportunity of eating good Peaches is obtainable with us. It struck me, however, as very odd that I did not see one Nectarine either at the Halles or in the fruiterers' shops. Grapes were especially abundant, but nothing of really good quality could be had under a franc a pound, and these were the Chasselas of Fontainbleau, or Buckland Sweetwater. I saw at Potels on the Boulevards some fine boxes of this Grape from the celebrated gardens of Messrs. Salomon of Thomery, where outdoor cultivation is carried on with great success. They were very beautiful, with that lovely rosy tint on them which they acquire in a sunny climate, but after all they somewhat lack flavour and lusciousness. The cheaper kinds of Grapes, black and white, come from the south, and although very sweet and cooling, are no way to be compared to the hothouse Grapes to be procured here. Of course the price is very different, varying from 25 to 70 centimes a lb. The little purple Fig was the only one I saw in September in the market or shops. They are very luscious and are much prized, whereas comparatively few English people care about them. Neither Pears nor Apples presented anything remarkable; and although France is the country *par excellence* of the Pear, yet the common idea amongst French people is that Duchesse d'Angoulême is the thing to arrive at; and, as far as my experience goes, good Pears are not often to be had in the Halles Centrales or the other markets in Paris. Some, of course, are to be had in the fruit shops, but probably the best go for exportation. It is in the flower markets, however, that the French have the pull on us, not on the costliness of our cut flowers, for I am sure that the lovely Orchids and stove plants that one sees at Dickson's are rare visitants in the Paris bouquetiste; but one has only to go the flower market at the Madeleine and see how widespread is the taste amongst the Parisians for flowers to decorate their rooms. The plants are not, as a rule, expensive ones, Marguerites, Heliotropes, Verbenas, Geraniums, and small plants of Pomegranates, Dahlias, and such like; but as they stand in quantities, each enveloped in its sheet of white paper, you see at once how much beyond us they are in such matters, and how ready they are to bestow care and attention upon their pets.

In making this comparison I have not been actuated, as far as I know, by any feeling of partiality. One so constantly hears France upheld in such matters to the disparagement of our own country, that I thought it might be well to show there are more ways of looking at a question than one. I believe that the market gardeners in the neighbourhood of London are quite as well up to their business as those of Paris. The things cultivated are in many respects, as I have shown, different, but that is because there are different tastes to supply, and that we come to the higher products of horticulture, either in fruits or flowers, we are far ahead of them; and so I think, on the whole, we may well be satisfied that we hold the foremost place amongst the nations of the earth in that science of which so many are such devoted adherents.—D., *Deal*.



We have received the Programme of the INTERNATIONAL HORTICULTURAL EXHIBITION, which is to be held at Paris from the 20th to 31st of May next. It comprises 247 classes, embracing every section of horticultural industry.

— MESSRS. J. CHEAL & SONS, Lowfield Nurseries, Crawley, Sussex, inform us that they have learned by cable from their representative at the NEW ORLEANS INTERNATIONAL EXHIBITION that they have been awarded the gold medal for the best collection of one hundred varieties of Apples, also five silver medals for other collections and classes of Apples and specimens of fruit trees, and money prizes to the amount of 420 dollars. The whole collection consisted of about two thousand fruits in two hundred varieties.

— We are pleased to learn that the CAMBRIDGE BOTANIC GARDEN SYNDICATE have recommended the increase of the Curator's stipend from £150 to £200 per annum. In the comparatively short time this garden has been under Mr. Lynch's superintendence a wonderful improvement has been effected in its condition; the general health of the plants is very satisfactory, and the collection is being rapidly increased by the

addition of rare and beautiful plants. By his energy and wide knowledge of plants Mr. Lynch will soon raise the Cambridge Botanic Garden to a foremost position, and even now it is well entitled to rank next to Royal Kew.

— THE LIVERPOOL HORTICULTURAL ASSOCIATION'S third meeting of the season was held on Saturday evening last (3rd inst.) in the lecture room of the Free Public Library. The Vice-Chairman of the Association, Mr. T. White, occupied the chair. Papers were read on the "Cultivation of the Azalea" by Mr. W. Mease, Wyncote, Allerton, and "The Culture of Selaginellas," by Mr. R. Cubbon, Woolton Heys, both of which subjects were rendered in a manner to call forth warm approval from the well-attended meeting. At the conclusion of a good discussion the usual votes of thanks were accorded.

— IN addition to the plate of Magnolia Campbelli mentioned in another column, the "Botanical Magazine" for the present month gives a figure of the old FUCHSIA TRIPHYLLA, an interesting and pretty plant, upon which the genus was founded 180 years since. It was collected by Plumier in the West Indies, chiefly on the Island of St. Domingo, and it was imperfectly figured by this writer in 1703 under the name of Fuchsia triphylla flore coccineo. The same plant was many years afterwards named by Lamarck Fuchsia racemosa, which was adopted by several other writers. Though so long known, this Fuchsia is scarce in cultivation, and the specimen from which the figure referred to was taken was sent to Kew by Messrs. Henderson. The flowers are bright scarlet, about 1½ inch long, the tube contracted towards the base, with short sepals and petals. The blooms are produced at the ends of the branches in a racemose manner, and are slightly drooping.

— MR. JAMES BEADLE sends the following record of the RAINFALL AT SANDLING PARK, Hythe, Kent, for the year 1884:—January, 1.42 inches; February, 1.89; March, 1.45; April, 1.70; May, 0.00; June, 0.93; July, 2.25; August, 0.85; September, 2.00; October, 2.77; November, 1.28; December, 4.46 inches. Total, 21.00 inches.

— MR. R. H. GOVETT, in the "Transactions of the New Zealand Institute," gives some startling facts as to the bird-killing powers of PISONIA BRUNONIANA, or P. SINCLAIRII. A sticky gum is secreted by the carpels when they attain their full size, but is nearly as plentiful in their unripe as in their ripe condition. Possibly attracted by the flies which embalm themselves in these sticky seed-vessels, birds alight on the branches, and on one occasion two silver-eyes (Zosterops) and an English sparrow were found with their wings so glued that they were unable to flutter. Mr. Govett's sister, thinking to do a merciful act, collected all the fruit-bearing branches that were within reach and threw them on a dust-heap. Next day about a dozen silver-eyes were found glued to them, four or five of the pods to each bird. She writes:—"Looking at the trees one sees tufts of feathers and legs where the birds have died and I do not think the bird could possibly get away without help. The black cat lives under the tree, a good many of the birds falling to her share, but many pods get into her fur, and she has to come and have them dragged out." The Pisonias are relatives of the Marvel of Peru, being included in the family Nyctaginaceæ, and several others are remarkable for their spiny glutinous branches.

— WE are informed that Mr. Philip MacMahon, Curator of the Hull Botanic Garden, has commenced a series of fifteen POPULAR BOTANICAL LECTURES at the Young People's Institute, Charlotte Street, Hull. The Syllabus includes a general discussion of the structure of plants, their classification, distribution, uses, and cultivation.

— MR. JOSEPH MALLENDER sends the following SUMMARY OF METEOROLOGICAL OBSERVATIONS AT HODSOCK PRIORY, WORKSOP, NOTTS, IN DECEMBER, 1884:—Mean temperature of month, 39.1°; maximum on the 13th, 57.7°; minimum on the 31st, 23.3°. Maximum in sun on the 13th, 84.2°; minimum on the grass on the 31st, 19.4°. Warmest day, the 14th; coldest day, the 31st. Mean temperature of air at 9 A.M., 38.0°. Mean temperature of the soil 1 foot deep, 39.7°. Number of nights below 32° in shade, seven; on grass, twenty-three. Total duration of sunshine in the month, 14.2 hours, or 6 per cent. of the possible duration. We had twenty sunless days. Total rainfall, 1.45 inches. Maximum fall in twenty-four hours on the 2nd, 0.23 inches. Rain fell on eighteen days. Average velocity of wind, 14.7 miles per hour; it exceeded 400 miles on fourteen days, and fell short of 100 miles on five days. Up to the 19th the weather was very mild, with strong west and south-west winds, and an average amount of rain. Sunshine very deficient throughout the month.

— FROM the same correspondent we have the following METEOROLOGICAL SUMMARY FOR THE YEAR 1884:—Mean temperature of the year, 48.9°. The warmest day, 11th of August. Mean temperature, 69.9°. Coldest day, the 30th of November. Mean temperature of air at 9 A.M., 49.6. Mean temperature of soil 1 foot deep, 49.9°. Total duration of sunshine, 1233 hours, or 28 per cent. of possible duration. The brightest day was 28th of June. We had eighty-three sunless days, and 100 hours less sunshine than the average of the last three years. Total rainfall 19.31 inches, which is nearly 5 inches less than our average. Maximum fall in twenty-four hours on the 9th of July, when 2.04 inches fell. Rain fell on 158 days. Snow fell on thirteen days. This year will be chiefly remembered for its small rainfall and for the absence of frosty weather.

A WORD TO YOUNG HEAD GARDENERS.

VERY glad am I, in common with many others, to find the closing number of our valuable Journal for 1884 containing such an excellent and seasonable article as that under the above heading from the pen of "A Working Gardener." Every sensible gardener, be he young or old, cannot fail to admit the value of the many excellent suggestions contained therein. The old axiom, "It is never too late to mend," is forcibly applicable to all of those who occupy the position of head gardener, consequently many of us need an occasional reminder. But "A Working Gardener" has not attempted to set himself up as the paragon, or essayed to teach moral philosophy to the elder brethren of the craft. He has rather striven in a very lucid manner to give young and aspiring head gardeners wholesome advice, the result of and founded upon actual experience. Sound, practical articles like these are of great benefit to young men who, like myself, can only boast of a couple of years' experience as head gardener. Such advice acts as a guide—a sign-post, in fact, to point the way out of the many labyrinths of difficulty which often beset us at the outset of our career. If there is one thing above all others that I admire the good old Journal for it is the sound advice which it gives every year, and is ever ready to give to young gardeners. Every young man who reads its contents carefully every week need not feel at a loss for a direction out of difficulty. I am not lavishing undue praise on it when I say that it has always shown a deep interest in the welfare of young gardeners, and has been the means of bringing out many brilliant men to the front as accomplished writers and gardeners.

Your correspondent's article is so thoroughly good that there is nothing to which a young head gardener may take exception. Every sentence teems with good advice. The moral duties of a gardener are especially good and ought to be attentively read and thoroughly digested; the same, too, may be said of a gardener's professional duties. The position of head gardener is too often coveted and obtained by young men who are by no means qualified for the post. A great mistake is made by many young men in supposing that if they can manage the glass department they are qualified for the post of head gardener. Never was a greater mistake made than this. A man to become thoroughly qualified for the post of head gardener must possess a good knowledge of kitchen, flower, and fruit gardening and its minor details. He must not be too proud to handle the spade or use a wheelbarrow, otherwise he cannot possess a practical knowledge of his business, and thus be able to profitably administer the labour power—a great point in the management of a garden. There is indeed a greater need of practical knowledge of outdoor operations, and of a much larger amount of skill, forethought, and anxiety coupled with it than many young men are aware of, as many find to their cost when taking to their first head place and are lacking in these essentials. Let young men, then, who wish to become efficient head gardeners serve at least two-thirds of their probationary career in the kitchen, fruit, and flower garden. Let no task be too humble for you to undertake, remembering that when you are head gardener you will have to direct men under you to do similar tasks with economy and despatch.

Another point so ably dwelt upon by your correspondent is that of studying the wishes of your employer. Many a good gardener in all other respects has lost a good situation owing to his not studying the views and wishes of his employers. Gardeners often have particular hobbies which are displeasing to their employers, and despite hints to that effect the former persists in carrying them out; consequently, it finally ends in a separation between master and man. There is no defence to make in the matter, as an employer has a perfect right to demand that a servant shall obey his reasonable orders. Some gentlemen take particular interest in their gardens, and possess no ordinary practical knowledge of gardening. In these cases it is the gardener's duty to faithfully carry out his employer's wishes, which sometimes, especially in matters of taste, may prove advantageous from an instructive point of view. Gardeners learn much by social intercourse, and if they command respect from their employers they will often gain more knowledge of the artistic portions of gardening in conversation than from a hundred books. An employer who finds his gardener wishing to please will study the interests of the latter, as I have proved from very gratifying experience.

There is much that might be said on this point, but I have already written enough to support what "A Working Gardener" has enunciated in his article on this subject. One point omitted I must, however, mention. It is the necessity of keeping and giving a strict account of your stewardship in all matters relating to the garden under your charge.

Be careful in all monetary matters, and see that your employer receives his due. Keep an account of all vegetables and fruits that are sent into the house. Much unpleasantness will thus be avoided. In conclusion, let us hope that what "A Working Gardener" has striven to inculcate into the minds of young men may be appreciated and turned to profitable account. That "A Working Gardener" may be able for many years to come to annually contribute a similarly useful article is the wish of—A YOUNG HEAD GARDENER.

MUSCAT HAMBURGH GRAPE.

THIS excellent Grape is probably the best black variety in cultivation, and is correctly described by Mr. Barron, especially when he states that its appearance is one of its primary qualifications. Few finer-looking Grapes have been exhibited than some of the samples we have seen of Muscat Hamburg. Though they are not often seen on exhibition tables at English shows, they occasionally create admiration such as few other Grapes do, and first-rate quality is sure to outdistance any competitors on the exhibition table which may be pitted against them. Fifteen or twenty years ago this Grape was more often seen in good condition than now. We have a distinct recollection of the bunches which came from Archerfield and Dalkeith Gardens, also the three grand bunches which were exhibited at Leicester when the Royal Horticultural Society made their provincial tour to that town. These perfect bunches of great size created much wonderment at the time, though, perhaps, not exceeding the admiration created by the fine examples of Golden Champion from Dalkeith at the same exhibition, which the late Mr. W. P. Ayres described as "the finest Grapes which the world ever saw." The Muscat Hamburgs were grown at a small unpretending place in Oxfordshire, where the gardener acted in the capacity of the gardener and coachman. The great bunches of large berries which Mr. Fowler brought from Castle Kennedy to the first International Exhibition which was held at Edinburgh are fresh in the recollection of those who had the privilege of visiting that grand Exhibition, where the finer kinds of Grapes were exhibited in great numbers; and though such do not make a grand display before the untutored as the larger coarse kinds do, nevertheless the real pith of high-class culture is manifested in the highest degree of excellence when such examples are produced. With the successful growers of Muscat Hamburgs Mr. Johnstone at Glamis Castle is associated. When he made his remarkably successful appearance at the second International held at Edinburgh, Muscat Hamburgs were prominent amongst that veteran grower's exhibits, and the quality was well tested by his bunch of this kind carrying off the first prize for flavour against all comers. At a later date, with Muscat Hamburgs, we have Mr. Boyd of Callander House, Falkirk, holding the highest honours at the late International Exhibitions both at Manchester and Dundee. Mr. Boyd makes no more difficulty in growing his Muscat Hamburgs than the other varieties grown so well at Callander House. Nevertheless we hold that there are soils which are suitable to one class of Grapes and do not act in the same substantial manner on others. Some of our friends who have grown Grapes well in one part of the country have found great difficulty in doing the same thing in other positions. Of course practical men who are in possession of sound theory well supported by perseverance, are successful wherever they are placed, a wet, dry, cold, or warm position being no barrier to their success.

Some facts connected with my experience of Muscat Hamburg Grapes may not be unworthy of notice. Several years since I succeeded one of the most intelligent gardeners that I ever knew, who had tried a number of experiments with Grapes as well as other fruits. In a house of late Vines he grafted two Muscat Hamburgs on Espiran, and planted one Vine on its own roots. The trio, which fell in my care the following season, did most satisfactorily, but those which were grafted outdistanced the others for free setting and size of berry. All produced abundantly and gave little trouble for years, the grafted ones producing round berries, while the fruit from the Vine on its own roots was most oval in form. They gave great satisfaction at the dessert table from their finely finished appearance and large high-flavoured berries. I can write thus freely on the merits of those Vines, the credit for their condition being justly due to another.

I planted a Vine of Muscat Hamburg on its own roots at the warmer end of an early house. They set, ripened, and coloured freely, but being forced to come in for use during May and June the berries were smaller, but equal in flavour and colour. Many excellent examples of Muscat Hamburgs may be seen at private places where exhibiting is prohibited, consequently they are never heard of.—M. TEMPLE.

AURICULAS.

A CORRESPONDENT, "T.," asks a question of seedling raisers, which I, as one of them, very readily answer. He is troubled by the solitary appearance and slow distribution of sterling new varieties of Auriculas, and the only solution to his mind is that there is perhaps "some understanding that within certain limits they shall not be distributed." One fundamental understanding certainly he has—though an Auricula grower—not taken into account, and that is, Nature's own. Nature has a kind of Statute of Limitations with regard to highly developed forms of the Auricula that no acts of ours can do much to amend. Briefly, the Auricula does not breed fast. Unlike the Carnation and Picotee it is not compelled to "make grass" for a livelihood. There is no compulsory flight of suckers as with the Chrysanthemum; no chance of an offspring on a detached leaf as with the Begonia; no root-sang capable of producing

germs like Primulas of the denticulata type. We are dependent upon its charity of offsets, and of this charity the Auricula is oft-times chary.

If your correspondent will suppose himself gifted with just one small sucker, say of the grey-edged George Lightbody, and watch how long it takes him to get a stock sufficient for himself and for the present demand, north and south, for a first-rate Auricula, he will understand the seeming slowness in which trustworthy seedlings must be getting on. If I may instance my own collection, he would be lost in the unfamiliar forms of well-known foliage; not merely because there are but few of the old sorts left among them, but because, with few exceptions, no seedling appears in quantity enough to make any leafy feature of its own. It is a few of many varieties, and not many of one, that form at present the striking feature and infinite interest of a seedling collection of classic Auriculas.

One of the principles upon which raisers are bound to act for their own credit's sake, and for the best interests of the flower, is to try a seedling well before letting it out. It should be the equal or superior of what has been the best attained before it. It may not be yet the perfection of its class, but should have claim to some nearer approach, though in difficult points this may be slight. It is time the day was over of having to grow a quantity of some wavering sort for the offchance of a correct bloom; of having to say to a brother who asks what unstable thing you have there, "Ah! you should have seen the truss I had of that ten years ago." On these lines of belief and practice the unwritten history of many seedlings which I kept at first is—that they were distributed, not by a "letting out," but by a gentle "letting down" where they would not be heard of (though might live happy ever) afterwards.

Lest I might, single-handed, lose a seedling of marked merit, a few florist friends have plants, of which the increase, and if necessary, the plants themselves come back. In these hands "T." has seen "no attempt to increase the plants beyond the ordinary method of removing side shoots," and verily I have not imposed the risk or labour of extraordinary methods, yet most minute and patient pains are kindly taken. However, in due time, which with the Auricula is so largely in Nature's hands, I think I may say, for others and myself, that we hope to see the distribution of such seedlings as we may raise worthy of all cultivation, and that meanwhile we would rather speak within bounds than outside them.

As to the outlook for the coming bloom, the winter condition of the plants here, as elsewhere, is very fine. They have kept a very rich winter habit, and this is a great help towards the formation of a full heart and its hid treasure.

As to autumn blooming, "T." is quite right in saying that the time of potting has little to do with it. It is a mere catchword to say that early potting means autumn blooming. I have always repotted as early as possible, from the end of April to middle and end of May, with always but little, and often a very minimum of autumn bloom. Autumn blooming, so far as I can see, is either the trick and tendency of a variety, or, if widespread, is the result of summer-time mistreatment; it may be by starvation, overdryness, neglect by uncleanness, exhaustion by heat, or some cause that incites a plant, in circumstances of distress and danger, to hurry on towards the nearest process by which it can save its species before the hour of death.

As to top-dressing, I have for years not practised it on the old plan. If the plant be already up to the neck in the soil, I do nothing but keep the surface open. If earth need be added, some of the ordinary potting compost—which is very simple—is put on as soon as the foliage starts in spring.

With reference to green-edged Auriculas being chief transgressors in autumn blooming, there are Col. Taylor, Freedom, and Beeston's Apollo, and others that are continually given to that way; but I do not think it is limited to class so much as to variety. I have seen the tardy Richard Headly, grey edge, bloom in autumn, and that old white edge, Smiling Beauty, which comes out with such deliberate slowness in spring, likewise the green edges I have mentioned, and divers selfs as well. Some of my own seedlings in all four classes will indulge in this ill-timed display, and the habit is decidedly constitutional. Other instances with me are happily rare, but never quite unknown. Only half a shock is the unwelcome surprise over some usually decorous plant sending up an autumnal stem, over which one says, "What! you among the insurgents?"—F. D. HORNER, *Burton-in-Lonsdale, Yorkshire.*

"THE ROSARIAN'S YEAR BOOK, 1885."

As each January comes round we have articles on this little book written by men who have attacked and overcome the natural difficulties of climate, situation, and soil, and have proved conclusively that with most other things, so with Rose-growing, "Where there's a will there's a way."

Mr. Pemberton on his gravel, Mr. Hall on the stiffest of clays, Mr. A. Hill Gray on his precipice, Mr. Biron on his cliff at Lympne—all four, with many others, have come, seen, and conquered; and the results of their victories is the delight of every visitor to our Rose shows.

When I ask my friends, "Why don't you grow Roses?" I often get this answer, "Well, you see, they are only in flower for about a month in the year, and when out of bloom they are an eyesore." How thoroughly this nonsense is exposed in this annual by Mr. George Paul in his article on "Tea Roses as Bedding Plants!"

Very few gardeners (professionals) understand the pruning of Roses, and if they say they do, then I can only answer that not one in twenty carries his knowledge into practice. Well, in the last three or four issues

of "The Year Book" the subject of pruning, when and how it should be done, has been practically exhausted, and although the doctors differ at times in detail, still the reader will now be able to learn the whole art of pruning from these articles.

Let me ask gardeners to swallow their pride and learn something from amateurs, who, so far as the Rose is concerned, are the real professors in the art of its culture. I will not write more about this "Year Book," or I shall spoil the feast which I can promise to all who will buy and read it.—J. A. W., *Alderminster.*

[An excellent photograph of Mr. George Paul forms the frontispiece to the book.]

MENTZELIA BARTONIOIDES.

A LOVELY annual, which I have long known as *Microsperma bartonioides*—it is also known as *Eucnide bartonioides*, but on referring to the "Genera Plantarum" I find it placed under the genus *Mentzelia*. It is quite rare, and I have found it known to none who have seen it here, but once seen it is too beautiful to be forgotten, and now, after some trouble at first in getting the seeds, I have grown it for several years, chiefly as a greenhouse pot plant. For this purpose it is admirable, and continues flowering for a long time. The specimen here illustrated (fig. 5) was taken from a plant set aside for seed after it had done duty through the summer in the Cambridge Botanic Gardens. It is attractive in its light green elegantly cut foliage, and especially so by its clear and bright yellow flowers from the centre protruding an elegant brush of yellow stamens. It is far superior to *Bartonia aurea* for the greenhouse. I have found several of the *Loasæ*, to which order this belongs, very useful and interesting for indoor culture, especially *Loasa vulcanica*, the best way of growing which I find is to plant it out in summer and take it up very carefully as soon as a good specimen is formed, or in autumn when the flowers would suffer injury from the weather. For this *Mentzelia* that treatment is unnecessary, and it is well grown in pots, planting three in a 32-sized pot. It is a native of Mexico.—R. IRWIN LYNCH.

ORCHIDS.

[A paper read by Mr. D. Birt before the Caterham Horticultural Society, December 12th.]

(Continued from page 5.)

AND now let us pass to what I think is not the least interesting part of our subject—viz., the structure of the Orchid flowers. It may assist us to appreciate some of their peculiarities if we recall to our minds the formation of an ordinary flower. Let us take for example a Wallflower. This flower in its bud stage, and before it opens, is encased in a green envelope. This outer covering expands as the flower opens and turns back in four pieces, thus forming a sort of cup in which the flower proper appears to stand. This cup is called the calyx, and the four divisions are called the sepals. The sepals though useful as a support for the flower add little to its beauty. Standing in the calyx or sepals there is a ring of four coloured leaves or divisions, which chiefly give the flower its own peculiar character and colour. These four coloured divisions are the petals of the flower. If the Wallflower consisted only of the four green sepals and the four coloured petals we should be content with it so far as appearances are concerned, but it would have one great defect. It would be without any organs of reproduction. These organs are two. There is first the pistil which you see in the centre of the flower. Inside this at the base are the seeds of the plant. The top of the pistil is called the stigma. Around the pistil are clustered six organs called stamens. The top of each of these organs is called its anther, on which the pollen is found in the form of fine yellow dust. This pollen is the fertilising agent, and when some of it becomes deposited on the stigma the grains of pollen shoot out long and minute tubes, which strike down the pistil and come in contact with the seeds, which till this operation is effected are unfertile and useless.

It has been established beyond dispute that finer seed is produced, and the strength and constitution of the plants grown from it are increased and improved by cross-fertilisation—that is, fertilisation brought about by the pollen of another flower or plant than that which produces the seed. Mr. Darwin says upon this subject, "It is hardly an exaggeration to say that Nature tells us in the most emphatic way that she abhors perpetual self-fertilisation." Now, undoubtedly insects do cross-fertilise ordinary flowers. They often carry pollen from one plant to another. But you will observe that in the case of the Wallflower (and the remark applies to all common flowers), no special means are present for securing cross-fertilisation, and it would seem to be a matter of chance whether a flower is fertilised by its own or by foreign pollen. With Orchids, on the contrary, there are most elaborate contrivances by which cross-fertilisation is insured, and it is these contrivances which distinguish Orchids from common flowers. And here permit me to say, I speak of other flowers a

"common," not because we are without interest in them, but simply in order to express their inferiority in point of complexity and elaboration of structure.

Let us look a little into the formation of, say, three Orchid flowers

changed from green to the prevailing colour of the flower. At first it is a little difficult to think of these important decorative parts of the flower as forming the calyx. We so accustomed to the case of common flowers to regard that organ as useful only, and as adding



Fig. 5.—MENTZELIA (MICROSPERMA) BARTONIOIDES.

of different types. We will take first a *Cattleya*. It has a calyx consisting of three sepals which formed whilst the flower was in bud its envelope. The sepals were then externally green as those of the Wallflower; but whilst the calyx of the Wallflower remains green to the end of the flower's existence, the calyx of the *Cattleya* has

nothing to the beauty of the flower. But here it would seem as if Nature in her effort to make the flower specially attractive to the passing insect (whose assistance she desires with a view of cross-fertilisation) had beautified an organ which she does not commonly ornament. The extent to which the calyx adds attractiveness to the

flower will be seen if we remove the three sepals which compose it. We then have left the three petals, which are not, as are the petals of most common flowers, all of them similar in shape and colouring. The two side petals are alike, but notice how different is the lower one. It is larger than the others; it is curled round so as to be tubular, or rather perhaps funnel-shaped. It opens outwards so as to form a landing place for flying insects. See how beautifully carpeted is this landing place. What a bright patch of velvet for the creature to step over as he walks into the shady recess of the flower to sip the honey which awaits him within. Let us remove the two side petals; then we will remove the third petal or lip as it is called. And what is this which we find enclosed within the lip? This is called the column and is composed of the pistil and stamens combined.

(To be continued.)

THE INSECT ENEMIES OF OUR GARDEN CROPS.

THE POTATO.

(Continued from page 484 last vol.)

GARDENERS, farmers, and also the public at large, one may presume, will admit the necessity of a regulation promulgated in 1877, which makes it penal to "sell, keep, or distribute" the Colorado beetle, or to fail to report its appearance, upon Potatoes or any other plants, to the nearest police establishment, this part of the regulation being somewhat singular, perhaps. At all events, thus far any harm that might else have arisen from the carelessness of some persons or the imprudent curiosity of others has been prevented, and we in Britain, happily, know nothing by experience of *Doryphora decemlineata*, concerning which such alarming, but not entirely groundless, reports as to its ravages in America from west to east have been published, some of which tend to make it out almost worse than our Potato murrain. For in many instances, owing to the destruction of the leaves, the plant dies from exhaustion, the harm being intensified by a high temperature. The beetle could not easily be mistaken for one of our native species, for it is of an orange colour, with a black mark like a spearhead on the thorax, and five black stripes upon each wingcase; the larva or grub is yellow, reddish, or light brown, six-legged, and rather hump backed. I think we are tolerably safe from the intrusion of this beetle, but we do have nearly every year some trouble from the visitations of the grub of another beetle. This, however, preys upon the tubers.

The wireworm, as we commonly style it—though we might use the plural, for our foes of this sort belong to several species, yet are much like each other in appearance and habit—is the larva of some click beetle or elater, the insect being remarkable for its power of leaping with a clicking noise when in its beetle stage. The tough wiry larva, which is of straw colour, is, by its possession of six legs and no more, distinguished from other larvæ which feed upon the Potato tubers, and it is endued with longevity beyond many of its brethren; since, though when full grown it is not an inch long, it is believed to live for three years at least. It is one of those insects that turn up everywhere, both in gardens and fields, but if it has any marked preferences these lie in the direction of Cereals and Turnips. In some years, as appears from the valuable reports published by Miss Ormerod, the grower of Potatoes is a loser by its attacks. There is a common agreement as to this circumstance, that the crop of later summer is the one that is chiefly the sufferer; still the wireworm has been often complained of in April and May. *Elater lineatus* and *E. obscurus* would be the species generally occurring upon the Potato, and what is true of them in other instances would apply to them as foes to the Potato, that they thrive during a dry season when the growth of the plant is retarded, and that the application of plenty of manure lessens the probabilities of attack. Rolling is also good, and it being the fact that the wireworm seldom occurs in those districts where seaweed is sometimes distributed over the Potato fields, salt is thought to be unfavourable to the insect. Land that has previously had Clover upon it, or a corn crop, often has the wireworm left as a legacy to a succeeding crop of Potatoes. Whenever there is suspicion of wireworm, it is recommended to apply gaslime, about twenty bushels per acre in the spring, allowing it to remain on the surface till after rain, then the ground must be well worked previous to planting. Or in autumn we might put thirty bushels to the acre, and it may then be ploughed under the soil. With the growing Potato it is difficult to kill the wireworm when it has begun its attacks upon the tubers or roots, because it is in the habit of shifting its position frequently, and trapping can only be tried on a limited extent. The rook has been accused of uprooting seedling Potatoes in its eager researches after the wireworm; but it does less mischief amongst Potatoes than in

the Turnip fields, where the ordinary agriculturist steadily maintains this bird is of no utility as an insect destroyer.

One of the unwelcome tribe of the bugs, allied to the fly (*Aphis*) and to the scale (*Coccus*), is a regular visitant to the Potato, hence it has been called the Potato frog fly (*Eupteryx Solani*), and its brethren, *E. umbellatarum* and *E. bipunctatus*, also appear now and then, but seldom in large number. They pursue the same course as the frog fly—that is, they pass their whole lives upon the plant, either on the stem or leaves, subsisting through all their stages upon the sap. It has not been found as yet that the frog fly does any perceptible injury to the Potato, this is probably because its generations do not succeed each other so rapidly as is the case amongst the aphides. The mature fly is only one-tenth of an inch long, green or greenish yellow, with brown eyes, and four glossy wings, which are large in proportion to the size of the body. Its minute eggs are placed on the under side of the leaf. The larvæ are very similar to the parent, but wingless, and furnished, like it, with the stout sucker or rostrum. This is also possessed by the pupa, which feeds until it is on the point of entering the winged state. Supposing this species were abundant upon the plants the only method of dealing with it would be by washing or syringing, if that seemed worth the trouble and expense.

That the Potato is occasionally to be seen swarming with the fly is a familiar fact to us, and by no means any proof of remissness in the cultivator, particularly with crops in fields, for the flies make sudden migrations from one species to another very different, or travel from their parent locality to a new neighbourhood. Hence several species of aphid may be taken off the Potato; and its most usual fly, for that it certainly has, varies much in colour. Yet though this species, *Rhopalosiphum Dianthi*, is common upon the Potato, it is reported by Mr. Walker to feed upon about sixty plants, wild and garden. Thus, for instance, it occurs on fruit trees as well as vegetables, often infesting the Peach in autumn, swarming sometimes on such plants as Tulips and Crocuses, but particularly prefers the Swede Turnip and Potato. This is the *Aphis vastator*, so styled and figured by Smee in his work upon the vegetable, yet only in this way to be connected with the Potato disease that the punctures and the exudations of a crowd of these insects must debilitate the plant, and therefore render it liable to a fungoid growth. It has, moreover, been suggested, though not proved, that the aphid tribes not only inflict wounds, but also throw an irritant liquid or saliva into the tissues of plants. This aphid is yellow, green, or brownish, having a broad head and short antennæ. The abdomen of the wingless female is so transparent that by a moderate magnifier it may be seen crowded with young. In the winged form it is occasionally almost black, the head and antennæ invariably of that colour. There is a belief amongst the Belgian farmers that this species flew across from England in 1834, arriving on the Continent in such hosts as to obscure the light of the sun. Mr. W. G. Smith believed that he had discovered the ramifications of *Peronospora infestans* not only amongst the external organs of aphides, but penetrating the body of the insect. Other microscopists have, however, questioned whether the objects seen were mycelial threads, since they might have been nerve filaments or tracheal tubes belonging to an aphid. Still, it is possible that where this fungus abounds it may grow into, and therefore destroy, some of these insects.

A species of thrips, very minute, is occasionally abundant beneath the leaves of the Potato, and two or three of the mite species have been observed also. Some think they feed upon the fungus or devour the smaller aphides. When the tubers are decaying they are visited by other mites, rove beetles (*Staphylini*) sometimes, and by centipedes, or millepedes, as may happen. Gardeners often fancy these latter attack healthy tubers, but I believe this is rarely the fact.—ENTOMOLOGIST.

UNDER GARDENERS.

THE Journal of the 1st inst. was more than usually enriched with advice which might be reflected upon with advantage. Mr. Bardney at page 2 under this head commences the new year with a subject that in my opinion is well worthy of careful consideration and discussion, and it is penned, too, in a manner and spirit that is equally worthy of notice. Mr. Bardney says, "I have hitherto avoided these discussions because they have frequently been directed to prove degeneracy." Such well-meant words I say are to be admired, and in reply to them let me invite foremen in good positions and of the middle class, and young men under the foremen, to make an opportunity to honestly give us their ideas and experience. It is a subject on which I might say very much, as it is one which I have truly at heart. At the outset we must be convinced that to be a gardener requires a quite different training from almost every other calling, and as to the mental capacity required there seems no limit. With such greatly improved productions and general tastes it would appear

impossible to prove degeneracy. From my experience I should say there is only about one-third which enter into gardening pursuits who are in every way calculated to become competent gardeners. I am an advocate for extreme kindness in every reasonable way, and no gardener can do his young men a greater kindness than to wisely rule them against all degrading and loose practices, although it may appear somewhat opposed to their liberty sometimes. Different gardeners must have different ways or powers of ruling; many not the best of gardeners are good or strict heads, and some excellent gardeners do not possess so much command. It does not follow, however, that the former actually teaches his men so much as the practical gardener. I have known gardeners so strict that the young men felt almost shut out from right of interest by being told to work and not think. Mr. Bardney suggests an improvement upon such a ridiculous command by teaching to both work and think.—LATHYRUS.

OLD TIMES AND NEW MODES OF GROWING THE CHRYSANTHEMUM.

SINCE our reference to Mr. Beaton on page 6 last week we have been requested to publish what the "Grand Old Gardener" said on the subject of flowering Chrysanthemums in summer, in reference to raising new varieties from sports and ripening seed in England. Under the above heading Mr. Beaton wrote as follows thirty years ago:—

I shall first mention an ingenious experiment which I saw begun, under very favourable circumstances, in the summer of 1825, but the result has not yet been proved, although it might be proved in eighteen months. This experiment was tried on a new Chrysanthemum, and most of them were new at that day, in Edinburgh, and beyond it. However, all plants which were new and good were to be seen with Lady Gordon Cumming, at Altyre, sooner than anywhere else in those parts. She was fond of the sciences; a proficient in many branches of science herself; and her house and purse were always open to men of science, who were delighted to favour her, in return, with specimens and seeds from all parts of the world; and from China, among the rest. Her garden was an experimental garden in a literal sense; and she was the ruling power, the guide, and experimentalist in disguise. No one but her head gardener and one or two of the assistants knew that every experiment was proposed and the plan of carrying it out suggested by Lady Cumming. Great people appear greater when this trait in their character is understood. Lady Middleton proposed, suggested, and, with Sir William, settled beforehand, everything I did at Shrubland Park, and they gave me the credit of it, and wished the world to believe it due to me. How different from some who would be great. But I am not preaching a sermon; I was only going to mention the ingenious experiment which Lady Cumming wished her gardener, Mr. Temple, to try in the summer of 1825, but some family arrangement called him away from the north; and the first thing which his successor, Mr. McLean, from Lee's nursery, did, was to upset all the experiments and plans of Mr. Temple; but he kept all the old garden hands till he learned to whistle the family tune, and he did well; but the ingenious experiment was forgotten from that day till one day last week, when it came into my head, no doubt on good purpose. If I had thought of it sooner, and had proved it, as I think it will be by someone else, it would make me feel proud of myself, and I ought to be thankful that I forgot it till now.

At the beginning of September the plants were housed, and a few of them were put into the stove; the extra length caused by forcing was considered no detriment then, and we had them "in" by the beginning of October. As soon as they were out of bloom we did not turn them aside as we do now-a-days, but rather put them into the Pine stoves, on the side curbs, without cutting them down, except a little at the top with the dead flowers. The Chrysanthemum will stand the heat of the stove in winter, and seems to like it; the tall stems never seem to want cutting down—at least ours did not—and the suckers were pulled off as fast as they appeared, and cuttings were then made of the upper branches only; about the end of March they were removed to the greenhouse, and they were planted out with the Dahlias, in the borders, in May, where they soon made great bushy plants as tall as Salvias.

About this time it was rumoured that Chrysanthemums sported, both in China and England—that is, that a branch here and there would occasionally give flowers of a different colour from the rest of the plant, and when cuttings were instantly made from the sporting branch the new colour would follow and become permanent. Now, this curious disposition to sport was made the foundation of the ingenious experiment, which I want particularly to be settled next year, or the following year at the farthest. The particular experiment was tried on a sport, but I should think any kind would do; at all events, the thing has not been proved either way. The rationale of the plan was founded on the fact that a bud from a variegated Jasmine will cause all the green leaves to turn variegated also; even if the variegated bud should die before all the leaves tinged with the matter which caused the change. To follow up this idea on a plant of Chrysanthemum, which was known to be naturally disposed to change, or sport, five or six different kinds were grafted on one such plant in May, and on side branches high up on an old stem which wintered in the stove; then, by thus compelling so many different kinds to circulate their juices in the body of a plant already noted for a sporting character, it was reasonably expected that the chances of inducing a still farther change from the normal type would be increased five or six fold, according to the number of different kinds grafted; but, as I have said already, the experiment was not completed, and the question remains open to this day, although I might have made a fortune by it long since.

It remains for me now only to point the experiment out to others, and

in doing so there is a second experiment which I wish to connect with it, and one which is as likely as not to be of still greater use to British gardeners; I mean that an attempt should be made to cause the Chrysanthemum to seed with us as freely as the Dahlia; and why not? Our present plan of turning the plant into an annual is one great cause why it does not seed with us; that cannot be gainsaid by anything we know of in physiology. A second cause of barrenness is, making cuttings from the suckers only. It stands to reason and science, if there is any difference between them, that the blood or sap in a sucker of any plant whatever is of the same degree, say, of maturity, as that in the branches in the upper parts of the same plant. There is not the smallest question about the very different degrees of strength, ripeness, development, or whatever we choose to call it, in the sap of a limb or branch, and the sap in a sucker fresh rising from the roots; then, if age, firmness of wood, or ripeness and infirmity of constitution by age, accident, or by the hand of man, are less inimical to fruitfulness than youth, vigour, and bad blood in the vegetable kingdom, we have the two to choose from in the present system of propagating, and the mode of managing the Chrysanthemum, and in that which we followed in 1825. The inference is perfectly correct; but the result remains to be proved. I have not the smallest doubt, in my own mind, but the present heads of Chrysanthemums may be kept alive and in good health, to bloom every year, as long as a Gooseberry top; and I can conceive the possibility of some of these heads at least arriving at maturity when they may be as prone to seed in England as they are at present to throw up watery suckers, with which we are content to raise gaudy flowers from, and thus leaving the chance of good seedlings to foreign gardeners, under a better climate. The French, "our allies," were the first to find out the doubling propensity of Dahlias; and the Italians were first on the list with Pompon Chrysanthemums at least; but who can say that we ourselves will not excel them both, and all the rest of them, if we but go the right way about it?

Do, or not do, the load was heavy upon me for some time, and I could not sleep comfortably under it. New Chrysanthemums we must have, some way or other; new shades and new shapes, and, as the old Roman said, "if you do not find a better way than mine, use it until you do." Save a few of your choicest kinds this winter in the stove, or anywhere else, from the frost; remove the suckers as fast as they come; if the plants are 3 feet high, cut off 1 foot, and so on in proportion to other height; if there are many shoots, all the better; thin them as they do Raspberry stools; three of the strongest keep in an 8-inch pot, and only four in the 11-inch size. I would not keep a larger size, and I would not disturb the roots for years, in case old roots, like old branches, may assist the plants to seed; but in the way to that stage, take the chances of a sport, by grafting as many different kinds next May or June as you can stick on. Should no sports appear for the first two years nothing is lost; you have still two strings to your bow—the chance of sport and the sure way of bringing all the shafts into a seeding age and condition. Two birds were never killed with so little shot and powder and so good an aim.

From 1816 to 1826 there was no flower half so popular in England as the Chrysanthemum. In the middle of this enthusiasm I took up the spade and the current notions of the time as matters of course; and from 1821 to 1851, when I had, perhaps, the best collection of them in the kingdom, every move about them was at my finger's ends.

The first of them that I saw in the open border was the Early Blush, near Culloden, where the last battle was fought in the cause of the Pretender. In the autumn of 1826 four kinds of Chrysanthemum flowered against the wall of the Infirmary garden at Inverness, just above tide mark. About Forres, Elgin, and on to Gordon Castle, the early kinds from China flowered quite freely out of doors in those days; but whether the new ones would do out so far north is more than I can tell; though I am quite sure that Pompons, which are a hardier race, would flower out of doors round Inverness just as well as about London.

That they should grow in Amboyna, in Cochinchina, and in our own Pine stove in winter, without hurt or signs of "drawing," is a most remarkable fact in the history of herbaceous plants natives of temperate climes; and I do not know of another such instance in the whole range of gardening. I have said already that without cutting them down after flowering we kept them over the winter on the kerbs of the Pine stove at Altyre, near Forres, when I was a lad, and they stood the heat as well as the Ixora or Pancratium; but when I wrote that, two years since, I was not aware that the Chinese induced them to sport into varieties by grafting so many kinds on one plant, as then suggested, for the fulfilment of an old experiment which was begun at Altyre in 1825. Since then I have learned that some Chinese drawings in the possession of the Horticultural Society represent grafted plants of them, or rather plants with so many various colours on one head as could be had only by grafting.

A gentleman in Northamptonshire keeps some of them in the stove every winter, on purpose to flower in the spring, as he told me himself not three months since. Mr Cuthill of Camberwell had a medal, some years since, from the Horticultural Society for a large plant of Chrysanthemums in full bloom in May; and I see no reason whatever against a general system of having Chrysanthemums and Pompons in flower from the end of September to the middle of May, providing you have the necessary conveniences, and choose to go to the expense of such luxury. But what would you say to a bed of them planted out at the end of April to flower all the summer with the bedding plants? Surely you would get seed enough then.

PHOTOGRAPHIC ALBUM.—We have recently had an improved form of the Photographic Album brought under our notice by Mr. Downes of

T. J. Smith & Son. The mounts on which the portraits or views are usually placed are, in this case, beautifully and artistically enriched by landscapes and drawings of flowers; the former are in the best style of chrome-lithography, so well executed as to give them the appearance of water-colour drawings. The example before us contains views of Pangbourne-on-the-Thames, Windermere, Loch Katrine, Grasmere, Henley-on-Thames, in all twelve views, besides the numerous floral subjects which are printed in gold. The fastening arrangement is clever and the boards are luxuriously padded. It is the best thing of the kind we have seen.

THE NATIONAL AURICULA AND CARNATION AND PICOTEE SOCIETIES (SOUTHERN SECTION).

WHEN I read the extraordinary letter on page 7 I wondered if Mr. Dean had been appointed by a majority of one at a general meeting whether he would have considered himself rightly empowered to act or not. If he had been so chosen, and any individual had taken strenuous action against him, and he had been prevented from acting in his elected capacity he would have had some reason for complaining that he was "rudely thrust aside;" still, he is such a defender of legality that he would, if he could, thrust aside (I will not say "rudely") the right of the majority in favour of the minority if that minority favoured himself. That is, I think, a fair deduction in moderate language from Mr. Dean's letter of last week.

I make no pretensions to being generous, but I try to be just, and should not like to see myself complaining because I have never been placed on the Committee. I consider those who appointed the members are honourable men with a better knowledge of what is required in the interests of the Societies than I have, and even as good, if I may say so respectfully, as is possessed by Mr. Dean with his "something like twenty years' experience," if for no other reason than that the experience of some of those of whom he complains is longer than his.

I, as I have said, am not a member of the Committee, and am quite without a grievance, neither was I present at the general meeting held at South Kensington in December; but, although not present, I have a fairly good idea of what transpired on that occasion. I am credibly informed that the "protest" read there by Mr. Dodwell was the result of an urgent private appeal that had been made by circular to each member of the Societies, and one of those circulars is in my possession; but no similar and widely distributed private appeal was made to the members to support the action of the Committee as determined at the meeting held in October. Had any such appeal been made, I know quite well the majority at the general meeting would have been larger, but as it happens it was quite large enough. I am further informed that the Committee was appointed "with power to add to the number," and that Mr. Dean was distinctly invited to act by the Chairman, but as distinctly refused, on the ground that he refused to be a member of the Carnation Society.

Again, as to Mr. Dean's complaint of his not having received an invitation to attend the Committee meeting that he is pleased to call an illegal meeting, my first observation is that it seems a little strange that he should feel hurt because he could not attend a meeting which in his view was not legal; and my second is, after it was explained that his non-receipt of an invitation was, for reasons stated to him and to the meeting, purely accidental, and after he explicitly accepted the explanation in "good faith," that it does not seem to exhibit great generosity of mind to reiterate his complaint in a public manner, and to suppress his acceptance in "good faith" of the explanation that was tendered to him.—A COUNTRY FLORIST.

My attention has been directed to a leaflet circulated by Mr. Dodwell, in which he states the vote I gave at the general meeting of the above Societies was "a fraud. Mr. Wright of the *Journal of Horticulture* office, who never was a member, never paid a subscription of any kind, held up his hand, and was counted by the Chairman as entitled to vote;" and Mr. Dean, relying on Mr. Dodwell's accuracy, has also, in a communication rejected by the press and published in another manner, emphatically declared my vote "fictitious." This is not the proper place for discussing that matter, and I only allude to the subject now to state that both of those gentlemen are in error, and that neither of them sent me a copy of the gross fabrication they caused to be circulated in other directions.—J. WRIGHT.

IN reference to Mr. Dean's letter at page 7, allow me to say that the custom has always been for one united Committee to manage the business of both; and yet the two Societies have been perfectly distinct. Mr. Dean has never asked for information, and but for his observations on December 9th I thought he cared nothing about the management even of the Auricula Society. Mr. Dean's last attendance at a meeting, either general, special, or Committee, was on March 14th, 1882. When a member of any society absents himself from its meetings for two years and seven months, and when that member gets up and declares his deep interest in the Society he has thus neglected, one may almost be excused for doubting his sincerity. Mr. Dean has evidently made some new discoveries since he avowed "his deep interest in the Auricula Society." One of his discoveries is this: "That when the Secretary is one of the principal exhibitors it always leads to unpleasantness." Mr. Barlow of Stakehill was one of the principal exhibitors in the north of the Tulip Society. Did unpleasantness occur there? Mr. Horner has been for

years, and still is, Hon. Secretary and Treasurer of the Auricula Society. He was until he came to exhibit in the south one of the principal exhibitors. It never led to unpleasantness. I can tell Mr. Dean what causes unpleasantness; people who cannot control their tempers make things unpleasant everywhere. Another new discovery he has made is, that the small exhibitors of Auriculas "felt that their interests were represented in Mr. Dodwell." How long have they had this comfortable feeling? Who looks after the interests of the small exhibitors of Carnations and Picotees? The tumult in 1883 has not yet been forgotten. I will leave Mr. Dean to make a few more important discoveries.

I will now state a few plain facts for the consideration of Mr. Dodwell. He is evidently dissatisfied with the result of the meeting of December 9th. He has stated publicly that Mr. Wright of the *Journal of Horticulture* was not entitled to record his vote, as he was not a subscriber. Mr. Wright joined the Societies a considerable time before the general meeting, and he certainly never thought of attending it before I told him on the day previous he was entitled to take part in it, and I had his subscription of £1 1s. There never has been any rule to guide the Secretary how members are to be received, or what gives them power to vote. The usual course was followed with Mr. Wright, and for it I am entirely responsible. That Mr. Pohlman's son was brought up as a person entitled to vote is to me rather mysterious. His name is not in the list of subscribers for last season. How came he to be entitled to vote? When or for what purpose was his subscription paid? No subscription was due from Dr. Hogg in 1883, as he had withdrawn, but on my invitation he again became a member; but if Mr. Dodwell does not object to one thing he will to another. I deliberately state that the meeting of Oct. 14th was summoned exactly in the usual manner, and with no evil intention, as has been alleged. It was called in the same way as that of July 8th, which was summoned by Mr. Dodwell. There was a complaint at that meeting that some members had been left out. Probably Mr. Dean was forgotten; at any rate, he was not present. All the other objections made by Mr. Dodwell can be met and refuted. Mr. Fraser never was invited. He is not a member of either Society, consequently he was not present. Mr. Dodwell objects to Mr. Veitch and Dr. Hogg being present. They both attended at the meeting on July 8th, hence they were invited to attend on Oct. 14th. It may seem to outsiders not quite in order to ask members not on the Committee to take part in the proceedings, but it had been done before as a matter of courtesy, so very few members of the Committee used to attend; and if there was any member present at the Royal Horticultural Society's meetings who had knowledge of the business they were invited to sit down and take part. It had been done before with the approval of Mr. Dodwell. I say emphatically that Mr. Dodwell had not a majority of votes in his favour on Dec. 9th.

I come now to another question—that of proxy voting. He put his case to the members in his own way; very pathetically, no doubt. He sent them a circular containing a copy of a letter he addressed to the Editor of the *Gardeners' Magazine*, but he did not send my answer to it, which appeared in the same paper. It was a one-sided affair entirely. He brought his proxies to the meeting, and very properly they were not admitted. He says he had an overwhelming vote in his favour—fifty-three against twenty-two. Who are the fifty-three? Are not many of them his own personal friends, who subscribed small sums to the Slough Supplementary Show? Another question must be answered, and it is more important than the other. Who are the twenty-two? I can answer that question. Amongst them are the leading florists of the northern and southern section. How many leading men are amongst the fifty-three? When there are no rules to guide the executive of a society it would be impossible to act in such way as to please Mr. Dodwell if he wanted to find fault. But Mr. Dodwell objects to rules. He says in a new circular just issued, dated December 27th, the sixth of the series. It is addressed to Mr. Shirley Hibberd. "Rules by their very nature restrict; I resist restriction." Mr. Dodwell has no need to state a palpable fact. He is an autocrat in his way, and acts just as he pleases, and he is pleased to act in the most extraordinary manner sometimes. Last summer, for instance, he would not be controlled, he gave me to understand, and I would draw particular attention to the words—"I will maintain the position of leader I was pressed into eight years ago, and except as following a direct vote of the Committee, which I shall always uphold, I will tolerate no interference with my direction." He was at this time involving the President of the Carnation Society, the Vice-Presidents, and Committee in legal proceedings, entirely without their consent or knowledge. I tried in vain to restrain him, warning him that the Committee would not support him in such irregular proceedings; and what was the result? The memorable meeting of July 8th was held, with the President of the Carnation Society in the chair, with the result that the Committee unanimously refused to support Mr. Dodwell in any further action. He might have got out of his difficulty in the usual way, but he retained office with the result that his co-Secretary, to save his self-respect, tendered his resignation. Yet on this honourable proceeding Mr. Dodwell pours his gall, and has shamefully misrepresented me. I state emphatically that the manner of my resignation was left with Mr. Dodwell. When I had made up my mind to resign, the first person made acquainted with my intentions was Mr. Dodwell. I asked him to summon a meeting. He sent me an evasive reply. In self-defence I called a meeting for October 14th, and invited him to come. The results are now well known.

I now allude to another circular dated December 30th, the seventh of the series, in which it is stated by Mr. Dodwell that I perpetrated a fraud, and yet another from Mr. Dean, dated December 31st (who already

seems to be an apt pupil of Mr. Dodwell), repeating the accusation in another form. These shall be taken into consideration presently. Mr. Dean's circular was sent in the form of a "statement" to the Editor of a contemporary, but was returned as unfit for their pages. When communications are unfit for publication in the usual way they can always be issued in circular form, only their authors must not forget that there is a law of libel. There are two sides to every question, and just and reasonable men consider both before deciding.

We are promised by Mr. Dodwell a history of both Societies. He says, "I founded the Auricula Society, and, that made safe, promoted on the same lines the Carnation and Picotee Society." Had Mr. Dodwell no helpers? Has he forgotten our first meeting on August 10th, 1876, in the Botanical Gardens at Manchester? The first suggestion of the exhibitions was made there. I believe I have attended every meeting, whether it was committee, general, or special, since that date, and always taking long journeys to attend them, while Mr. Dodwell sometimes did not need to stir from his own fireside. I have a history dating from August 10th, 1876. That history can be written by me as well as it can by Mr. Dodwell. In conclusion, I wish to say that I will answer no more letters or circulars either from Mr. Dodwell or his pupil Mr. Richard Dean.—JAS. DOUGLAS.

[Having permitted Mr. Dean to make his statement, and published the above replies, we must decline any further discussion in our columns, but replies can be distributed in circulars through the post to persons specially interested; and we cannot refrain from expressing our regret that in some circulars the literature of horticulture should be so degraded. It is not surprising they were rejected by the press. We long ago refused to insert Mr. Dodwell's letters. Their tedious verbosity might have been endurable, but their coarse personal reflections were quite inadmissible. His animus is now directed against Mr. Douglas, not because he resigned his position as Secretary, but because he was unanimously elected sole secretary by the Committee, and the election was ratified by the general meeting. As Mr. Dodwell has stated, "I have long known my period of work has passed," and "regretted I had not retired in 1881;" and further, that "the dual secretaryship added to, not diminished, the work," and he would, "without hesitation," leave the secretaryship in Mr. Douglas's hands "but for that thing men call caste," and that gentlemen (whom Mr. Dodwell has named) "would not allow him (Mr. Douglas) to lead unless he became Sir James"—after writing such sentences, which were read to him after the general meeting in December, Mr. Dodwell's attitude is the more extraordinary, because Mr. Douglas was elected without seeking the appointment. After stating these few facts, which we think ought to be stated, the public will be better able to estimate Mr. Dodwell's conduct, and understand the reasons that existed for not accepting Mr. Douglas's resignation.]

HYBRID PERPETUAL ROSES IN POTS.

(Continued from page 564.)

THE question next presents itself, Whether the plants are to be allowed to bloom, or must another sacrifice be made? Those intended for forcing the following season may be flowered without much detriment, but if the buds are removed directly they are visible, the superior growth of the plants will more than compensate for the loss of the flowers. Those required for specimen plants may also be flowered, but this is by no means advisable, for if they are allowed to bloom a season's growth is lost. Plants that are flowered will have to grow another season before they possess the same number of shoots that can be produced the first season by the system of culture I intend to detail. After the shoots of these plants have been trained outwards, and have assumed an upright position until the wood attains some firmness towards the base, they should be cut back to the place where they start upright. The strongest shoots in the centre may be served the same, only these should be cut farther back than those trained towards the rim of the pot. This is done to induce the plants to produce a greater number of shoots. For instance, if the plant to commence with possess only half a dozen growing shoots, by cutting them back instead of allowing them to flower fully double that number will be produced. The plants intended for forcing early, or moderately early, must not be cut back, but should be allowed to extend without, whether they are flowered or not. As soon as the plants start into growth they should receive every encouragement necessary to thoroughly develop it. If they are to make wood sufficiently strong, and ripen it sufficient for producing good flowers another year, they must occupy a position under glass until growth is completed. If this accommodation cannot be accorded them they may be placed outside after the weather is sufficiently genial. It is a good plan to make up a bed of fermenting material when they are first turned out and plunge the pots in it. The heat derived from an outside hotbed keeps the roots very active, while the top growth will be sturdy and strong. Before this second growth is completed the pot will be crammed with roots, and applications of artificial manure may be applied to the surface occasionally, or weak liquid manure given every alternate time they require water. The plants may be also transferred into pots 2 inches larger, the latter being the best course to pursue, and then no farther potting will be needed until after the plants have flowered the following season. Those grown for early forcing may also be potted in August, which will give them ample time to become established before winter.

The plants should occupy cold frames again during the winter, and be treated exactly the same as had advised for the first season. In early spring

they may be pruned, leaving about two eyes on the wood made after the shoots were cut back. These plants will produce a number of shoots this season, and a regular head of bloom, but their flowering entirely depends upon the wood made and the stage of ripeness it attained before the approach of winter. No attempt should be made to force them into flower, but they should be allowed to come forward as gradually and naturally as possible. No injury will be done if they are grown in a house where the night temperature ranges about 50°, provided a good circulation of air is given during the day to insure a sturdy growth. They need not be given this position until they have started into growth. The strongest shoots that are taking the lead must be trained outwards, so that the flowers will be evenly distributed over the whole plant. This is best accomplished by tying and training the shoots while in a growing state. In order to extend the size of the plants another year the strongest shoots should be trained into their proper positions, so that when pruning has to be done again, 6 to 9 inches of the last year's wood can be left. This will lay the foundation for plants of large size, and to insure their breaking well they must be started into growth under cool conditions.

After flowering the second season the plants may be grown outside, plunged in ashes, and repotted again towards the end of August. This time the soil should be carefully removed from amongst the roots until the old ball is reduced by at least one-third, when they may be repotted in the same size pots. Roses do not require large pots after the foundation of specimens has been laid. It is a great mistake to check them in their early by want of root-room; it is better to pot them on and reduce the size of the pots after good plants have been formed. After potting, the plants should be liberally syringed overhead to keep the foliage healthy, so that a good quantity of fresh roots will be made again by winter.

During the season of growth the foliage must be kept free from insects and mildew. Aphides are most readily eradicated by fumigating with tobacco. Red spider can easily be kept in check by a judicious use of the syringe, and the mildew may be stopped by syringing with a solution of softsoap prepared as I have recommended frequently in this Journal.

The soil most suitable for these Roses is good fibry loam, one-seventh of cow manure rubbed through a sieve and prepared by drying, one 6-inch potful of soot, and the same quantity of bonemeal to each barrowful of soil. If the loam is heavy a little coarse sand may with advantage be added; if light, one-seventh of clay. The best means of incorporating this with the soil is to dry it and then reduce it to powder.

During the season of growth Roses should never suffer by an insufficient supply of water, or they will soon become a prey to insects and mildew. Liberal quantities of water may be given, but under no conditions should the soil be saturated. The soil in which Roses are growing should never be dust-dry, not even during the season of rest, for this is injurious and unnatural to them. During this period the soil should be maintained in an intermediate state for moisture as near as possible.

The forcing of these plants into flower, their treatment, and management afterwards, must form the subject of another paper.—WM. BARDNEY.

ROTATION OF CROPS.

KINDLY give in your correspondence columns some practical hints that will aid me, as unfortunately I have not had sufficient experience to act with confidence in cropping a rather large kitchen garden now under my charge.—EX-FOREMAN.

[As the subject is too comprehensive to be dealt with satisfactorily in the form of a reply in the column referred to we append the following article by Mr. T. Record, who has had considerable experience in the important work in question:—"I think it will not be denied that a kitchen garden is an object to which considerable importance should be attached, its produce being as serviceable to the rich as to the poor, and important in affording wholesome and necessary food for all. Much encouragement has been given in various ways to vegetable culture during recent years, and improvement has followed; yet notwithstanding this improvement, I am of opinion that there are many persons among the middle and lower classes who would be greatly benefited if we could impress upon them the good results that would come from a thoroughly practical and systematic method of cultivating their gardens. I have selected two or three divisions or subjects upon which I think I can offer a few remarks, which, though not unknown in practice to the professional gardener, are certainly not studied sufficiently by those to whom I write. The first is

"*Management of the Soil.*—It is well known that soils vary considerably in different parts of the country, and even in the small garden of the amateur, or the still smaller plot of the cottager, there are frequently to be found soils of different characters. Assuming, then, that a person takes possession of a garden in autumn, he may find a strong adhesive loam, a light sandy loam, or a very poor gravelly soil; in each case, however, he may assure himself that the soil can be so improved as to be made to grow to perfection any sort of vegetable likely to be required, and in many instances without the addition of manure, for the first crop at any rate. This advantage must not be lost sight of, especially when manure has to be purchased, or cannot be obtained without much trouble.

"All soils are greatly benefited by pulverising—that is, trenching, digging, and ridging. In trenching or digging a retentive soil a good portion of some light opening soil may be added, with manure if necessary. If the soil is light and sandy, add a portion of loam or other substantial soil; or if a gravelly one, which is generally what is called a hungry soil, it will be much improved by the addition of any soil of more consistency than itself. Unless the ground has been under cultivation for years I do not advise the first trenching to be a deep one—a spit and a half or 18 inches will be sufficient until the surface soil has been worked and improved; this, when turned-in to the depth of 2 feet, will prove more beneficial to succeeding

crops than if turned in to that depth at first. In trenching, digging, or ridging in winter, leave the surface soil rough and loose, so that frost may penetrate it.

"In soils of close texture make use of what in Kent is called a "spud"—a wrought-iron tool with three prongs; if not, a digging fork rather than a spade, which is apt to close the soil instead of breaking it up in an open manner. The principal object in trenching is to afford scope for the roots of vegetables to penetrate in search of nourishment, as well as to prevent the soil being clogged with water, to facilitate the admission of air, whereby the temperature of the soil is increased, and to increase fertility.

"It will be well to mention other means of improving soils without the free use of manures, as these are not always obtainable, especially pig, horse, and cow dung. One is the application of chalk, which should be put on the ground in autumn, and allowed to become pulverised before being dug-in. Lime rubbish, wood ashes, or if a clayey soil, coal ashes sifted fine, will also do good. The next is well-decayed vegetable or leaf mould. It is well to have a reserve heap of each of the above in some corner of the garden, when a little can be applied at every digging. Take care not to gorge the soil with too much of any one kind. In any case, whenever manure is applied to the ground, it is better to dig it in at once; for if some vegetable manures are allowed to lie on the ground too long, much of their nutriment is lost by evaporation.

"*Laying-out and Cropping.*—About the first I shall not say much, because, as a rule, the position and shape of the spot are the best guides to the most convenient and economical mode of dividing the ground. That usually adopted is to cut the ground into plots or quarters by walks of convenient size for all purposes, and to arrange the fruit trees by the sides of these. If the area is bounded by a hedge, as is often the case in cottagers' gardens, the walk should be made next to the hedge, as for a certain distance from its base the soil would be occupied by roots, and be therefore less productive than any other part of the garden. Undoubtedly the most economical plan for the amateur or cottager to adopt is to so arrange the ground as to leave the whole of the best soil for cropping. Let ornamental appearance be a secondary consideration, though that may be studied in some degree according to circumstances.

"*Cropping.*—In connection with this there are some acknowledged facts which even many professional gardeners do not make a study of, but those who will take the pains to do so will soon discover to their satisfaction that the production of first-class vegetables is not only the best point to aim at, but is one of the most important branches of gardening, and their success soon inspires them with the confidence that a regular system of cropping and the rotation of crops is sound in principle and according to the laws of Nature. By a judicious system of cropping and change of crops the soil is much relieved, and manure is made the most of. Sir Humphrey Davy states that each sort of plant draws a nourishment from the ground peculiar to itself, and that after a piece of ground has nourished one crop, another of a different description may succeed it. Nothing can be a better guide than this, and, except in some cases where a succession of crops is required from a very limited piece of ground, no rule can be easier to carry out. Perhaps it will be better to reduce this to practice; and we shall suppose that a piece of ground has been manured, dug or trenched, and otherwise prepared for a crop of Strawberries, Asparagus, or any other perennial plant. In a few years the plants will have exhausted the soil of their own particular food, and in consequence will fail to produce a satisfactory crop. Now, instead of recropping the ground with young plants of the same kind, let the old be destroyed, and the ground dug, and it will carry a crop of Peas, Beans, or anything with roots which do not penetrate too deeply into the soil; on the other hand, let the new plantation of Asparagus, Seakale, Strawberries, and the like be made on ground that has grown any light annual and shallow-rooted crop. Unless circumstances compel a departure from the rule, I would advise what I find in practice to be a good plan—that is, never to let one deep-rooting crop succeed another, but always, if possible, to plant a shallow-rooting crop on ground previously occupied by a deep-rooted one and *vice versa*. If a perennial crop, such as Strawberries or Asparagus, has occupied a piece of ground for any length of time, let it be succeeded by one of annual duration. By carrying out this system, one crop to some extent prepares the ground for the succeeding one. The Onion, Shallot, and Garlic are the only crops which will yield fairly by occupying the same ground year after year; but even in these cases I am certain a change of crop would prove more beneficial.

"Next comes the classification of crops, which in my opinion is an important matter, in so far that it is a saving of time and labour, and allows of a good system of rotation being carried out. The arrangement for this can be best made in the spring when the principal cropping takes place.

"The following system will convey an idea of how I would classify them together:—Brussels Sprouts, Broccoli, Cabbage, and Savoys; Carrots, Beet, Parsnips, Salsafy, &c.; Onions, Shallots, Leeks; early Potatoes and Turnips; Scarlet Runners and Peas; late Potatoes and Turnips; Celery generally by itself. After this are the salads, such as Endive and Lettuce of sorts, Radishes, &c. The smallness of a garden and the great number of crops to be grown will preclude the above from being carried out to the full extent; nevertheless, a great advantage will be derived from the practice even to a small extent, and the ground will be found to fall vacant in regular order. Broccoli, or any of the Cabbage tribe, may be succeeded by Beans or Peas, or even Celery, with Peas between the trenches. After any of the root crops, such as Carrots, &c., the ground should be well manured, and will come in for Brussels Sprouts and similar things; and where early Potatoes and early Turnips have grown, Cauliflowers may succeed them. Late Potato and Turnip ground will carry a crop of Scotch Kale or any other sort of Greens for spring cutting. Celery ground is suitable for either Asparagus or Carrots, Beet, and the like, and Parsnips on such a preparation grow remarkably; Scarlet Runners or Dwarf Kidney Beans will also do well on such ground.

"The above description and arrangement are confined to the principal sorts of vegetables, the most of which, whether by gardeners, amateurs, or cottagers, must be grown to a large or small extent; but other vegetables, such as Spinach, which grows into use quickly, may be arranged by the side of those of similar duration, so as to come off at about the same time.

"The above system I have always endeavoured to carry out more or less,

and I find crops succeed with greater certainty, regularity, and perfection than if they were put into the ground in an indiscriminate manner."]

RIBES ALBIDUM.

THIS plant is a variety of the red-flowered Currant, *Ribes sanguineum*, a shrub now found in every garden of the smallest pretensions, and was raised from seed in the gardens of Admiral Sir David Milne, Inveresk, near Musselburgh.

From the perfectly hardy character of the parent species and all its varieties, the ease with which they are propagated, and the beauty of their pendant flowers, which enliven the garden at a period when but few shrubs are in blossom, they are well deserving the place they occupy in the public esteem. The variety *albidum*, as well as *sanguineum*, varies in the colour of its flowers according to the soil in which it is grown, being palest in sandy soils; but it is probable that much of the differences observable in distinct specimens may arise from the natural tendency of the plant to variation when raised from seed. The best varieties are slender-stemmed and quite deciduous, but we have seen a specimen with a coarse arborescent stem, dense foliage, almost evergreen, and flowers of a far less ornamental character, followed by prodigious crops of insipid black berries.

They will thrive in almost any soil, but succeed best in such as is moderately rich and moist, and the natural habitat of the species *sanguineum* being often in the neighbourhood of the Californian stream. Cuttings of the ripened year's wood taken off in autumn and treated



Fig. 6.—*Ribes albidum*.

as those of the common Gooseberry, will root readily in a sheltered border.

With the exception of the equally interesting *Ribes aureum*, or Golden-flowered Gooseberry, the plant now figured, with its sister varieties, are the only members of the *Ribes* family commonly found in cultivation, which, considering the beauty of many of the remaining species, is a matter of surprise. Among those less known we may mention *Ribes speciosum*, with red flowers and long projecting stamens; the *R. cereum*, or Wax-leaved Currant, with roundish glandular leaves, covered with a thin layer of a wax-like substance; the *R. punctatum* from Chili, with dotted leaves and greenish yellow flowers, borne in erect racemes; and handsomer still, the Snowy-flowered Gooseberry, *R. niveum*, with flowers of the purest white, and berries of a deep rich purple colour, which, unlike those of the other flowering species, are of an agreeable flavour, and, according to Dr. Lindley, "when ripe make delicious tarts, and would probably form an excellent means of improving the common Gooseberry by hybridising."

All who have ever gathered a Gooseberry—and who has not?—have we do not doubt, heartily wished the bushes thornless; but they would scarcely prefer the habit of another of the family, *Ribes Menziesii*, published by Sir James Smith under the appropriate name of *R. ferox*, which he describes as "a very remarkable species, whose branches are thickly covered with tawny setaceous prickles, about a quarter of an inch in length, and armed under each bud with three very strong and pungent ones an inch long, having sometimes lesser reflexed prickles at their

base!" and, what is worse, the young berries are "covered with prominent glandular bristles, which harden, as fruit advances, into stiff sharp spines, so that whatever its flavour may be, it seems perfectly inaccessible in the common way of eating Gooseberries." Another species, *R. Cynosbati*, the Dog Bramble Gooseberry, a native of Canada, has also prickly fruit.

Nearly all the *Ribes* grown as ornamental shrubs are natives of the North American Continent; one or two, however, are found only in South America, and a few in Siberia, Hungary, and other parts of Europe.—W. T.

MILDEW ON ROSES.

MR. CLAYTON, page 435 (last vol.), takes exception to my reply to "F," pages 417 and 381, asking for the cause of mildew on Roses and Chrysanthemums, in which I briefly stated what I believe are the conditions most favourable to the germination and development of the spores of this troublesome parasite. I also ventured to recommend the best antidote I knew for the prevention of its ravages. Although Mr. Clayton does not positively contradict my statement that "mildew is more prevalent in cold wet summers," he indirectly infers that the assumption is erroneous. He says, "Now I do not think anyone can call the summer of 1884 wet or cold, yet mildew on Rose trees has been very prevalent in this neighbourhood (North Cheshire)." This is quite possible, but it does not in the least disprove my statement, because even one day, nay, even a few hours, of wet cold weather during spring or summer is quite sufficient in any locality, especially a naturally damp one, to cause the spores of mildew to germinate and spread to an alarming extent, and if its first appearance be treated with indifference or neglect, and it be allowed to fix itself firmly on a plant in the open air, its progress is not only difficult to arrest, but it is almost impossible to destroy it altogether.

Mr. Clayton further questions the value of sulphur, which I recommended in combination with clear soot water as a preventive. He says, "Sulphur is a snare, and not a preventive; its effects are only temporary, and are gained at the cost of disfigurement." Sulphur is, I admit, in the true sense of the word a snare or trap to catch and destroy mildew in its earliest stages, but when set for this purpose on outdoor Roses its efficacy is dependent on a very variable and fickle spring—fine weather. If used in wet weather its potency is quickly nullified, but when used in fine sunny weather it is very effectual as a preventive in destroying the germs of the disease. It is, I also admit, even in fine weather but a temporary remedy, and should be frequently repeated; and in showery or damp weather, when, as so plainly shown by Mr. Worthington Smith, page 478, the spores of mildew are so numerous, they germinate so freely, and are wafted about so easily, it becomes even more "temporary" still, and so as to counteract the disease by destroying every fresh spore which may alight on the plants its application should be repeated the oftener, or as Mr. Smith so plainly puts it "in the earliest stages of the growth of the fungus before the spawn threads are woven over the little organs of transpiration, and before the leaves are injured by the piercing of the little suckers from the fungus spawn." It is very satisfactory to me, as I am sure it must be to many other rosarians, to find such an eminent authority as Mr. Smith attesting the value of sulphur as a preventive of mildew on Roses. It may be temporary in its effects, but this is but a weak argument against its use, seeing that nearly all garden operations are "temporary," and such are they likely to continue while time lasts. "Disfigurement" to foliage there may be from its application, but when used as I have recommended the disfigurement is so slight as scarcely to be noticed, and when compared with the hideous appearance of plants affected with mildew is not worth consideration. It is very probable that the addition of a small quantity of soap, as recommended by Mr. Smith, would make it even more efficacious and less observable.

Mr. Clayton further says:—"We want to get at the root of the matter, and not to content ourselves with guesses and nasty mixtures." No doubt there is yet much to be learned in respect to the germination and development of parasitical fungi under the heads Rust, Smut, Mildew, and Mould, as arranged by Dr. Cooke in his very excellent work, "Microscopic Fungi," to which Mr. Smith alludes, and which there can be no doubt every gardener could read with great advantage; and having done so I venture to think there are few who would even then feel that they had got sufficiently at the "root" of the subject to justify them in discontinuing the use of those preventives of which Mr. Smith approves, but which Mr. Clayton, I think, somewhat hastily condemns. In respect to the conditions which are most favourable to the growth of parasitic fungi a few remarks made by Dr. Cooke are very significant. To find them he says, "Where shall we go?"

"Hedgebanks, the sides of ditches, borders of woods. Our favourite localities have always been the dampest places in woods, railway banks, and waste places." These remarks do not seem compatible with the theory that dry seasons are most conducive to their growth. Mr. Smith does, however, infer that dry weather appears to favour the growth of the Pea mildew (*Erysiphe Martii*). My experience, however, leads me to believe that this pest does not flourish in dry weather, unless hot dry days are succeeded by damp foggy cold nights, and when such conditions exist no amount of watering at the root will destroy it, as I have proved in many instances; but if syringed freely with clear weak lime and soot water, with the addition of a small quantity of sulphur, its growth will be immediately checked.

That the spores as well as the mycelium of Rose mildew can both be

checked in their growth and rendered harmless, if not totally destroyed when the atmosphere surrounding them is under control, is perfectly understood by all experienced practitioners. Take, for instance, a well-constructed efficiently heated Rose house, situated in a moderately dry and sunny position. Place some pot Roses affected with mildew therein, and so regulate the atmosphere in respect to heat, moisture, and ventilation as to produce a temperature suitable to the growth of the Rose, with the atmospheric dryness as stated at page 417, and the spores and spawn of the mildew will be dried up in a few days; give a dusting of dry sulphur throughout the house, also over flues or pipes, and the destruction or check to mildew is the more rapid and effective. While these or similar conditions are continued the plants will remain free from its attack, but as warm spring weather approaches, and fires are no longer deemed necessary, the moisture by watering and syringing is increased. Clear sunny weather necessitates abundant ventilation; cold nights cause low temperatures; with a condensed damp atmosphere the hateful spot is again visible, and almost as soon as detected the whole house appears to be affected. Whence did this pest come? Were the spores simply held in check by conditions unfavourable to their growth, or were they fresh spores wafted into the houses through the ventilators, and, finding favourable conditions, immediately germinated? Whichever may be the case I know not, but it is only necessary to restore the former conditions of the atmosphere and the enemy is as easily vanquished as before. However microscopists and those engaged in agriculture and horticulture may differ in their opinions as to the origin and development of the various kinds of parasitical fungi, there can be no reasonable doubt that nearly all of them are much affected by certain states of the atmosphere, and however persevering and successful a gardener may be in destroying through the autumn and winter seasons the conceptacles or little black boxes so clearly and graphically described by Mr. Smith, he will not do wisely to think he has then got at the "root" of the matter, and that no further "temporary" precaution or preventives are needed, but should be ever willing and ready to use them when required, not by "guessing" at results, but by skilful practice begotten by perseverance and careful thought he should feel he is acting consistently and with every reasonable prospect of success.—C. W.

THE HONEY-GLANDS IN PITCHERED INSECTIVOROUS PLANTS.

THE four genera of pitchered insectivorous plants at present in general cultivation are *Nepenthes*, *Sarracenia*, *Darlingtonia*, and *Cephalotus*. Attention was drawn to the minute structure and physiological action of the first three of these by Sir J. Hooker in his celebrated presidential address to the British Association in 1874, while the structure and morphology of the last was treated of by my master, Professor Dickson ("Journal of Botany" 1878, 1881.) Both observers pointed out an attractive surface studded with honey-glands, which constituted the lid part, a conducting surface, either of an exceedingly smooth nature (*Nepenthes*), or beset with small downward-directed hairs (*Sarracenia*, *Darlingtonia*, *Cephalotus*), and in most cases a glandular surface (*Nepenthes*, *S. purpurea*, and *Cephalotus*), the secretion from which directly or indirectly assisted in digestion of animal products. In *Sarracenia* and *Darlingtonia* there was found in addition a detentive surface, covered with long deflected hairs.

A year ago Professor Dickson further drew attention to a set of magnificent attractive glands along the free edge of the corrugated rim in *Nepenthes*, which he named "marginal glands."

My attention has recently been directed to all the genera, and I propose stating here the main results. A detailed account of the comparative results obtained by examination of the different species in the young and adult condition will shortly be presented to the Royal Society of Edinburgh.

Nepenthes.—Examining a pitcher of Veitch's beautiful hybrid, *N. Mastersiana*, I observed on its outer surface what seemed to be the small openings of honey-glands. When microscopically examined they were found exactly to resemble those on the inner lid surface, except that the gland fossa was deeply hollowed out, and opened externally by a small orifice, while its inner surface was clothed to within a short distance of the orifice by the gland tissue, very much as in sphaeriaceous fungi the cavity of the perithecium is lined by asci. But even in this they agreed with the lid glands noticed by Dickson in *N. lævis*, and termed by him "perithecioid." Careful study of the outer lid surface revealed a few similar glands. On comparison of the species and hybrids grown in the Royal Botanic Garden, Edinburgh, a like condition was found to occur in all. The presence of these on the outer pitcher surface of *N. ampullaria* is interesting, since in it the lid is rudimentary, directed back, and destitute of glands on its inner surface.

At Professor Dickson's suggestion I then examined the expanded lamina, and was agreeably surprised to find that glands were scattered rather sparingly over its upper, but pretty abundantly over its under, surface, especially near its junction with the stem. The tendril intervening between the lamina and pitcher also possessed them, and in some cases they were of very large size. Passing to the stem it was found that some species had them very sparingly, others in considerable number, but while resembling those on the leaf externally, they were sunk much deeper in the tissue of the cellular layer, and strikingly reminded one of a simple animal gland.

After a comparative study of the different species I was induced to look at the sepals, as our garden curator, Mr. Lindsay, had mentioned to

me that a very copious secretion of nectar took place in flowering. A complete pavement of glands the same in size and appearance as those on the inner lid surface of the pitcher, was spread over the upper epidermis of each. In Hooker's elaborate monograph of the genus ("De Cand. Prod.," vol. xvii.) these are mentioned, though their complete resemblance to the latter is not indicated. A few large "peritheicoid" glands may also be seen on the lower epidermis, and in flowers of *N. bicalcarata* (for opportunity of examining which I am indebted to Mr. Courtauld of Baintree), these attain relatively a gigantic size.

We see, therefore, that in *Nepenthes*, with its dioecious flowers, the same structure, which by their secretion attract insects for aiding in fertilisation, also lure them to the pitcher, so that their dead bodies may help in the nutrition of the plant.

Sarracenia.—Mellichamp has pointed out that honey-glands are present not only on the lid, but also on the external projecting wing of the pitcher. I find, however, that, as in the last genus, they are diffused over the whole outer surface, including the lid; further, that in some of the species (*S. variolaris* and *S. rubra*) there are external upward-directed hairs, as in some of the *Nepenthes*. On the outer surface of the three bracteoles and of the sepals the glands are likewise numerous, and will undoubtedly be insect attractors for promoting cross-fertilisation.

Darlingtonia.—This genus agrees with the last, except that the glands are very simple, being one or at most two-celled. I have not as yet examined the flower, though there can be little doubt but that in it a like condition will occur.

Cephalotus.—Professor Dickson, in studying this genus, noticed glands not only on the lid and outer pitcher surface, but even on the ordinary foliage leaves. I therefore required to deal only with the flowers. Scattered among the "encapsulating" hairs on the peduncle, bracts, and six sepals, were many glands identical with those of the leaves, though rather smaller; but further, the peculiar glandular processes intervening between the stamens and carpels seem to be the same mounted on cellular outgrowths of the receptacle.

Nepenthes, *Sarracenia*, *Darlingtonia*, and *Cephalotus* are therefore found to agree fundamentally in their morphological arrangements for physiological purposes, though referable to orders widely separated systematically.—J. M. MACFARLANE (in *Nature*).

MAGNOLIA CAMPBELLII.

A FAITHFUL coloured plate of this handsome *Magnolia* is given in the *Botanical Magazine* for the present month (t. 6793), accompanied by the following description from the pen of Sir Joseph Hooker:—

"This, which is in every respect, except in having deciduous foliage, the noblest species of the genus, was, before the destruction of the grand forests that clothed the higher elevations of the outer ranges of the Sikkim Himalaya, by far the most notable tree of the district, and I have seen the flanks of a mountain rose-coloured in spring from its abundance and its habit of flowering before the development of the leaves. It was discovered by Dr. Griffith in the Bhotan Himalaya at 8000 feet elevation (near Tongsa), but his specimens were very imperfect, and his collections being buried in the vaults of the India House, nothing further was known of the plant till I met with it in Sikkim; he, however, describes it in his (posthumously published) 'Itinerary Notes,' page 153, No. 755, as a large tree, leafless when flowering, with flowers a span in diameter; the sepals (inner bracts?) green and petals white. This work did not reach England till after the publication of the 'Illustrations of Himalayan Plants,' in which *M. Campbellii* first appeared.

"As a species, *M. Campbellii* ranks near *M. Yulan* and others with deciduous leaves, whilst in its arboreous habit it has no rival. The trunk attains a height of 80 feet, with a dark bark, that of the branches being nearly black; the wood is white and soft, with about twelve rings to the inch, and is occasionally used for planking. Gamble, in his valuable work on Indian timbers, says that is now (1881) growing scarce in Sikkim, whereas when I was in that country upwards of thirty years ago, it was one of the commonest trees at about 8000 to 9000 feet on the hills near Darjeeling. It was chosen by Dr. Thomson and myself to commemorate the eminent public services of the late Dr. Archibald Campbell, for many years Political Resident at Darjeeling, to whom the rise and progress of that magnificent hill station is due, and who has further contributed largely to our knowledge of the geography, natural productions, arts, manufactures, and people of the Nepal and Sikkim Himalaya.

"Mr. Gamble says that the flowers measure as much as 10 inches in diameter, and they are often of a deep rose colour. I have seen four or five such on a branch a foot and a half long, resembling a bunch of *Nelumbium* flowers, but far more vividly coloured.

"Repeated attempts have been made to introduce *Magnolia Campbellii* by seed, but on arrival the fleshy albumen has always been found to have decayed and killed the minute embryo. Living plants have been sent by Drs. Anderson and King of the Calcutta Botanical Gardens, but they have proved too tender for the open air in the east of England. In Ireland, however, it has succeeded. I saw a small tree of it in Mr. Crawford's well-known garden near Cork in 1878; this flowered in March of the present year, when that gentleman kindly forwarded the flower for figuring in this work. At Kew it

grows well in the temperate house, but has not hitherto flowered. The leaves were fully developed on Mr. Crawford's plant in July, and were then added to the drawing. The fruit and seed, and the analyses of these, are added from the 'Illustrations of Himalayan Plants.' In the south of France and in Italy it has flowered on several occasions."

The flowers are distinguished by their petals being broad and rounded, of a delicate blush tint on the upper surface, and bright rose on the lower surface, which is particularly rich in the bud stage.



FRUIT FORCING.

VINES.—*Early House.*—Early-started Vines have made good progress and look very promising. Under judicious management they will, as the days increase in length, make up for the time apparently, though not really, lost while passing through the early stages of swelling and hursting their huds, for Vines started slowly invariably make better progress than when forced hard through December. Young vigorous canes that have been suspended over fermenting material should be tied up to the wires as soon as the most backward huds have pushed freely from the rods. Proceed gradually with disbudding, and tie down the young growths before they touch the glass. Stopping must be attended to in time; where the Vines grow evenly we prefer stopping at the third or fourth joint beyond the bunch, provided there is space at command. After this the laterals may be allowed to extend until sufficient wood is obtained to cover every available part of the trellis with fully developed foliage, when the strongest points are again stopped to prevent overcrowding. As the bunches become prominent the night temperature should be maintained at 60°, falling a few degrees on very cold nights, 70° to 75° by day from fire heat, allowing it to rise to 80° with gleams of sunshine.

Houses to Afford Ripe Grapes in June.—The house will have been closed, and the inside border well supplied with water at a temperature of 90°. Syringe the rods twice a day with warm water, taking care to wet every part of the wood, and allow the night temperature to range from 45° on very cold nights to 55° on mild nights, with 10° more by day. As a means of economising fuel introduce a good heap of Oak or Beech leaves to which a third of short stable litter has been added, turn it frequently, and make additions of fresh material as the heat declines.

Fruiting Vines in Pots.—If these are placed in or over fermenting materials they may be kept drier and warmer as the bunches come into flower, the night temperature being kept at 65° to 70° on mild nights, with a rise of 5° to 10° by day. Tie down and stop the young growths, and afterwards allow the laterals to grow until every part of the trellis is covered with foliage.

Late Grapes.—If not already done, late Grapes may now be cut and removed that the Vines may be pruned, cleaned, and allowed to rest. It is well to dress the cuts with styptic in order to prevent bleeding. When the Vines, glass, and walls have been properly cleaned the inside borders should be cleared of all the exhausted mulching and top-dressed with a thin layer of turfy loam, crushed bones, and decayed manure. The outside borders that have been covered all the winter may also be exposed to the influence of the weather, leaving only a light covering of litter to keep out frost. Any alterations and additions required in late Vine borders should be set about without delay. See that the drainage is ample, as the secret of gaining an abundance of useful roots in inside borders depends quite as much upon the quantity of tepid liquid they can take as upon the materials used in their formation. After taking away a quantity of inert and exhausted material, even if filled with hungry roots, fresh loam should be supplied mixed with burnt earth and old lime rubbish.

MELONS.—From plants raised from seed sown at this time ripe fruit may be cut at the close of April or early in May. This is, of course, provided everything goes satisfactorily with them and the weather is favourable to their growth. The seeds are best sown singly in 3-inch pots in fine loam and leaf soil, leaving room in the pots for top-dressing when the plants require it, plunging them to the rims in a hotbed if one is at command, as for raising Cucumbers and advised in our last Cucumber calendar, covering them with a piece of glass, which should be removed directly the plants appear through the soil. When they have made 2 inches of growth they may be top-dressed, keeping them as near the glass as can well be done without touching it, to prevent their becoming drawn. Should the frame in the morning be found rather full of steam arising from the fermentation of the dung and leaves, it will be advisable to leave sufficient air on at night to allow of its escaping, otherwise the plants are liable to fall; but when the plants can be raised under more favourable circumstances there is no fear of the plants damping off. If the pots can have a shelf near the glass in the Cucumber house or fruiting Pine stove, with a piece of glass placed over them, the plants will make sturdier and less succulent growth, and not in consequence be so susceptible of injury from damp. Most cultivators have their favourite varieties, but we may mention Scarlet Premier, Eastnor Castle, and High Cross Hybrid as good varieties. For early work Davenham Early is excellent.

PLANT HOUSES.

Hyacinths.—These will now come forward more quickly than has been the case up to the present. It is a mistake to transfer them suddenly from a low to a high temperature, for they will not start as freely as if they were brought forward under gradual and more natural conditions. However well rooted the bulbs may be they never do so well when hurried into flower, and frequently they commence opening their flowers on the top of the spike first. After they are removed from the plunging material they should be allowed to become perfectly green in a cool structure before they are introduced into a temperature of 45° to 50° to start, but as soon as they have commenced growing rapidly they may with safety be given a temperature of 5° or 10° higher if they are wanted quickly. They should be brought forward gradually in successional batches, so as to allow time for them to develop their flowers under comparatively cool conditions, as they will last much longer than those expanded in heat. In forcing arrange the plants as close to the glass as possible to keep both the foliage and flower spikes dwarf, for half their beauty is destroyed when they are drawn up tall and weakly. Supply weak stimulants liberally when growth is active, if large bells and spikes are required, and be careful that they never suffer by the want of water in any stage after removal from the material in which they have been plunged. Those that are not wanted for forcing for some time should be kept as cool as possible; if frost is just excluded from them it will be all that is required. Examine all that are still under ashes outside, and if they have well filled their pots with roots remove them to a cold frame and protect them from frost by covering with mats. The greatest care must be taken in admitting light to them until they are perfectly green. If exposed directly they come out of the ashes both the foliage and flower spikes are liable to be injured. It is a good plan to place mats over the frame for a few days. Those not ready for removal from the material in which they are plunged should have at least 6 inches of material over them, and in case of severe weather they must be farther protected with straw or any other material, so that they can be removed at any time when ready if frost continues without the slightest injury. Care should be taken that they are not left too long under the plunging material, for they must be removed directly they are ready.

Tulips.—The single varieties that were potted early will now come forward rapidly under the same conditions as *Hyacinths*. They will bear a little more heat without injury. All that were put thickly together in pans and boxes should be forced into flower first, for if lifted out of the boxes when in bloom, and placed five or six together in 5-inch pots, they will last as long as if they have been started and grown in them. But when this system is practised later in the season these flowers do not last nearly so long. Early in the season these bulbs flower somewhat irregularly, and it is almost impossible to produce even pots of blooms without they are made up from boxes or pans as they come into flower. *Tulips* are invaluable for room-decoration, especially early in the season, and are both choice and effective when five or six bulbs of one colour are used together or dotted singly amongst moss and small Ferns for edging groups or baskets of plants that may be used in various positions in dwelling rooms. Successional and late batches should be treated exactly the same as recommended for *Hyacinths*.

Narcissi.—Up to the present time the supply of these sweet useful flowers has been obtained from the Paper White and Double Roman *Narcissi*, but States General, Grand Primo, and such varieties, if potted as advised, will soon produce their flowers without much difficulty. The first is our earliest variety, and is grown here in preference to the two former, which are not always certain to flower profusely. It is probably a week or ten days later, but very much depends upon the time the bulbs can be obtained. Great care must be taken in forcing *Narcissi* into flower, or the foliage draws up tall and weakly, which destroys the appearance of the plants for decorative purposes. This does not matter very much when the flowers are required only for cutting, but when the plants have to be associated with others it is important that the foliage as well as the flowers be as dwarf and sturdy as possible. Keep the plants close to the glass in an intermediate temperature, and give them a little air daily when favourable. Strong heat and a close confined atmosphere are unsuitable for the *Narcissus*. These bulbs when they once started grow rapidly under the plunging material outside, and care must be taken that they are not neglected by being allowed to remain too long before they are removed.

Crocuses.—No attempt must be made to force these into flower in heat, for they will fail to come forward and total failure will be the result. They should never be subjected to a higher temperature than 45°, in which they will come forward rapidly and soon commence unfolding their flowers. To have *Crocuses* real early, those that flower late in the season should be retained in pots and liberally treated for flowering early the following season. These, if carefully hardened and supplied with water until they have completed their growth, may be then plunged outside, entirely covering the pots with ashes, and if they remain undisturbed during the summer they will flower fully three weeks earlier than it is possible to induce imported roots to unfold their flowers.

Scilla sibirica.—These should be brought into bloom under as natural a condition as possible. Any attempt at forcing them in heat will end in failure. They naturally open their flowers singly, and if hurried many of the bulbs refuse to open their flowers at all. If brought on the same as advised for *Crocuses* they flower well in pots and make beautiful specimens for the first row of the conservatory.

Allium neapolitanum.—Those who are growing this plant in pots for the first time must avoid introducing them into heat, for they will not bear it without injury, for the foliage soon draws up weakly. The foliage

is all produced before the flowers are visible; the latter will come forward and do well if kept in a cool house where the temperature does not exceed 45°. Give abundance of water, and keep them while growing as near to the glass as possible if wanted for decoration in pots, but the flowers are more useful for cutting.

THE FLOWER GARDEN AND PLEASURE GROUND.

Bedding Plants.—Zonal *Pelargoniums* that have been kept perfectly dry at the roots are keeping well, only a very few in our case damping off. They should be still kept quite dry for at least another month, as any growth formed during the dull winter months is certain to be weakly and very liable to damp off. Remove all decaying leaves, and, where possible, turn on the fire heat, and give air freely on fine days. *Calceolarias*, *Violas*, and *Gazanias* now struck in cold frames should have abundance of air whenever weather permits, in order to prevent untimely growth. To prevent the soil about these and various other plants necessarily wintered in frames from becoming sour, occasionally stir it with a pointed stick or label, keep it rather on the dry side, and give air freely on dry days. The timely removal of a decaying plant, shoot, or leaf may frequently prevent the spread of decay to several plants surrounding it. Succulents are especially liable to damp off, and these must be kept perfectly dry and frequently examined. A dry shelf in a greenhouse or vinery best suits them, but the majority of the bedding kinds may be safely wintered in frames, providing proper care is taken with them. Severe frosts may be experienced at any time, and those who have many plants in frames must not be caught napping. The frames and pits with thin walls should be heavily banked round with either rough dry litter or leaves, and plenty of the former should always be ready for completely and heavily covering the frames—this in addition to either mats, old carpets, hags, or other material that may be put on. Do not be in a hurry to uncover after a severe frost is breaking up, and any frozen plants should be freely syringed with cold water, and kept close and heavily shaded, in order to ensure the necessary slow thaw. A rapid thaw proves fatal to many plants that with a little care would have recovered.

Chrysanthemums.—Owing to the favourable season both for growth and flowering, those in the open have been unusually good, and this we should think will induce many to plant them out more extensively than heretofore. Where large quantities of cut flowers are wanted during the autumn, the open-air *Chrysanthemums* may generally prove of good service, especially if a considerable number of plants be lifted and replanted in positions at the foot of walls previously occupied by the *Tomatoes*. Here they can be readily protected with mats, and will yield a surprisingly large number of good blooms. Young plants are much superior to old ones, and cuttings taken from house-grown and still-protected plants strike more readily than do those taken from the outside and perhaps frost-bitten plants. Our plan is to strike the number of plants required at the same time as we do those intended for pot culture, the majority already being rooted. A very slight hotbed and a frame is necessary or the best place to root *Chrysanthemums* at this time of year, the cuttings be placed thinly in small well-drained pots. A little ventilation should be left on if there is much steam in the bed, and any cuttings or leaves that are damping off should at once be removed. After they are rooted keep them cool, and protect the frames when there are signs of frost. Stop the plants early in March, and when breaking afresh pot off singly into 4-inch pots, using rich loamy soil. When well established they should be gradually hardened off and planted out before they are badly root-bound. They should have a good open position, the soil being well manured if at all poor, and may be planted about 2 feet apart each way. One stopping, this being done not later than May, is all that is advisable, as about six strong shoots are ample, and these if properly staked up will branch freely and eventually produce wreaths of blooms earlier and superior to any that may be grown in pots. At least that is our experience. Much depends upon the selection of varieties being suitable, as we find many of the finest sorts are fit for pot culture only. Some of the best of the summer or early autumn flowering section are *La Petite Marie*, *Chromatella*, *Madame C. Desgrange*—one of the best; *Hendersonii*, *Little Bob*, *Précocité*, *Illustration*, *Golden Madame Damage*, *Adrastes*, *Frederick Pelé*, and *Sœur Melaine*, the last-named being one of the most serviceable sorts in cultivation. Good Pompons are *Bijou d'Horticulture*, *Snowdrop*, *White*, *Gold*, *Lilac* and *Brown Cedon Nullis*, *Mdlle. Marthe*, *Golden Circle*, *Bob*, and *Model of Perfection*. Reflexed sorts that do well are *Alma*, *Golden*, *Peach* and *Pink Christines*, *Chevalier Damage*, *Dr. Sharpe*, *Gazelle*, *King of Crimson*, and *Julie Lagravère*, the last-mentioned being one of the very best for open-air culture. The majority of the smaller incurved varieties do well, but the best with us were *Barbara*, *Compactum*, *General Bainbrigge*, *Guernsey Nugget*, *Mrs. Dixon*, *Lord Wolsley*, *Mrs. G. Rundle*, *Mr. George Glenny*, *Mr. Corbay*, *Prince Alfred*, *Prince of Wales*, *Venus*, and *White Globe*. Of Japanese, the best were *Hiver Fleuri*, *Dr. Macary*, *Elaine*, *Fair Maid of Guernsey*, *Fremy*, *L'Africaine*, *Lady Selborne*, *Nuit d'Hiver*, *Peter the Great*, *Purple Prince*, *Source d'Or*, *Triomphe du Nord*, *Lord Beaconsfield*, and *James Salter*.

Renovating Roses.—Unless *Roses* are occasionally lifted and replanted in good fresh soil they not unfrequently fail to bloom satisfactorily. A complete change of position is advisable, but if this is not possible they should be lifted, the ground deeply dug, and a quantity of fresh loam or good garden soil and short manure be well mixed in. Before being replanted all the long roots should be shortened somewhat, and if the *Roses* can be planted before the ground has become saturated with rain so much the better. After all have been planted and the ground levelled a mulching of strawy manure should at once be given.

THE BEE-KEEPER.

BEEES IN RELATION TO FLOWERING PLANTS AND FRUIT PRODUCTION.

[A Lecture delivered at South Kensington by F. Cheshire, Esq., F.R.M.S.]
(Continued from page 19.)

AFTER pointing out the special adaptations to cross-fertilisation found in a number of blooms, the Lecturer turned the attention of the audience to orchard fruits.

The Apple, he remarked, is called by the botanist a pseudo-syncarpous fruit, because it may be regarded as five fruits gathered into a unit by an envelope formed by a development of the calyx. If an Apple be cut across we see five compartments or dissepiments in the core, each one of which should contain pips or seeds. The bloom which preceded the fruit had five stigmas, each one of which communicated with a dissepiment and required an independent fertilisation. Bees seeking honey would, by getting their breasts (furnished as they are with abundance of long webbed hairs) thoroughly dusted with Apple pollen and flitting to a bloom whose stigmata had reached the receptive condition, bring about fertilisation. It would, however, frequently happen that three or four of the stigmata only would be pollinated. In this case an Apple, though an imperfect one, would be produced. Trees agitated by the winds frequently drop a quantity of their fruits, hence known as windfalls, but the actual cause of this dropping is in by far the largest number of instances defective fertilisation.

In an examination made some time since of a large number of windfalls, less than four per cent. were found to have fallen through injuries traceable to insect pests, while the remainder had received pollination in from one to four dissepiments only.

Fertilisation is followed by a determination of nutrition towards the seeds, and the parenchyma of the Apple as a protective envelope gathers around them. If, therefore, we cut a defectively fertilised Apple across the middle, we find a hollow shrunken side lying over the unfertilised portion of the core. These facts taken together show conclusively how completely our Apple crop is dependent upon insect agency, and amongst these the hive bee takes the most important place.

In the case of the Strawberry the parts popularly denominated seeds which crowd its surface are really the fruits technically called achenia, while the Strawberry itself is really a succulent development from the flower-stalk. The stigma each of the achenia carries must be fertilised by insects which are attracted by the honey secreted by a ring of glands situate at the base of the Strawberry. The anthers are wide set, and as the insect walks around the bloom applying its tongue to the circle of glands, one side of its body is dusted with pollen from the anthers, while the other is applied to the stigmatic faces. In passing from bloom to bloom it frequently reverses the order of its progression, sometimes going round by turning to the right and sometimes to the left. As a result the pollen gathered up on one side of the body is probably transferred to the stigmas of the next flower visited. As in the case of the Apple, so here, fertilisation determines nutrition. The placentæ of the fertilised achenia increase enormously, the Strawberry grows and matures, but where any of the stigmas escape impregnation, there the Strawberry remains without growth, while other parts are rapidly increasing around it. The examination of a few fruits would be sure to supply examples where in circumscribed spots no progress has been made since the first full expansion of the bloom. The achenia are close set and green, and the flesh of the Strawberry is there crude and hard, while the rest is sweet, soft, and luscious. Imperfect insect work is again the explanation, bringing before us the remarkable fact that no perfect Strawberry can be produced without perhaps from three to four hundred independent fertilisations, accomplished it may be by the busy hive bee, which, in filling the niche in which the great Creator has placed it in unselfishly labouring in providing for the wants of its younger sisters, is unconsciously supplying to its master not honey only, but honey and fruit.

The Raspberry, although of another type, somewhat resembles the Strawberry in the multiplicity of its stigmas (sixty or seventy to each bloom), the wide setting of its anthers (about eighty or ninety in number), and its circle of honey glands. Similarly, too, the insect visitor in seeking nectar passes between the anthers and stigmas, applying its right side to one and its left to the other. Each seed fertilised by these visits is soon surrounded by the luscious envelope which protects the seed from injury, and makes the manufacture of raspberry jam a possibility. These rounded red masses with their enclosed seeds, technically called drupels, are never formed unless fertilisation has taken place; neither ripening nor growth being

possible in its absence. We see then in an aspect which may be new to many of us, that this wondrous scheme of Nature has correlations which we never could have anticipated, that a large part of the insect world is complementary to plant life, and plants in turn the sustainers of these insects, and that man, although he can plant his trees, is in no small measure dependent for a crop upon the assistance of those little labourers, who, by their unconquerable industry, supplied his table with sweets for long ages before he discovered the uses of the sugar cane.

HONEY MARKET.

THERE is at the present about to be floated a company termed the British Honey Company with a large capital, for the ostensible purpose of improving the condition of bee-keepers by purchasing with ready money from them the produce of the hive in any quantity, without any restrictions on the bee-keeper as to selling elsewhere, and for the purpose of supplying the public with pure honey. This is highly commendable, and deserves encouragement. But there are some questions relative to the persons concerned worthy of consideration. I suppose it may be said with safety that the shareholders are acting wholly in a philanthropic manner towards bee-keepers, expecting but a fair interest for their shares; but will they be able to pay rents, give sufficient salaries to the employes, and a remunerative price for honey and comb, and to sell to the public at a price that will increase the number of purchasers? If so their efforts will be entirely satisfactory to all concerned. But I fail to see how these ends can be attained without either lowering considerably the price to the bee-keeper or raising it to the consumer, which will have the very opposite effect from that intended—viz., to create a market. There are other difficulties also. If it is really necessary to have a different system of disposing of honey than that which exists at present, I think there are better and cheaper plans than that proposed. There are at the present time no paucity of shops in any town but that would willingly sell on commission all samples of honey sent to them, and by a judicious distribution it would be brought immediately under the attention of consumers. The bee-keeper, then, has only to learn the wants of the customers as to the style and material of package; but he will soon learn that it is the quality of the honey more than the package that creates the demand. Of late there has been by far too much stress put upon the package, which means expense, neglecting to impress the bee-keeper thoroughly with the importance of cleanliness and good quality. If bee-keepers will attend to these two things and get faith with the public, they will, I think, have no difficulty in obtaining a fair price at all times for any honey they have to sell. If we take the past twenty years as the average, the price may be fixed at from 1s. to 1s. 6d. per lb. wholesale. Anything below that would render bee-keeping unprofitable. Much of our honey is secured through great labour and expense in moving our bees to good pasturage, and very often after both toil and expense there is no return. But we hope the bad years are gone, and that there is in store a succession of good ones.

Some scheme, however, is necessary to bring bee-keepers into immediate communication with the consumer. This, I think, could be easily accomplished if something like the following was done. Let bee-keepers form themselves into an association having a representative in every town appointed by the central association, who shall receive from members the quantity and quality of the honey they have for sale. When this is ascertained the association should advertise the honey for sale with the names of the agents in each town, who may either sell or distribute samples to the different shopkeepers willing to sell on commission; but it would be better in such cases if the bee-keeper would consign direct to the proper quarter to be retailed. By such a system, if judiciously carried out, the bee-keeper would not only maintain a good price, but insure a speedy sale for his honey, while the shopkeeper would get a fair profit without any risk, and the public be supplied with pure honey at a moderate price. I have never had any difficulty in selling my honey, but had always a demand for more than I could supply, so was enabled to sell for my more unfortunate neighbours away from the town, much as described above. I think this plan would, if managed right, succeed far better in bringing the honey directly to the consumer and in a more satisfactory and cheaper way than any company or companies could ever expect to do.

There are many ways of bringing honey under the notice of the public, which ultimately causes a demand. One only I will speak of at present, but of two different persons; the one a lady, the other a gentleman. Their plan is to offer prizes for honey, and purchase all the cottagers can spare at from 1s. 8d. to 2s. per lb., which I learn is presented by these philanthropic people to their friends and acquaintances.—A LANARKSHIRE BEE-KEEPER.

TRADE CATALOGUES RECEIVED.

- Wm. Cutbush & Son, Highgate and Barnet.—*Catalogue of Flower and Vegetable Seeds.*
- J. Cheal & Sons, Lowfield Nurseries, Crawley.—*Catalogue of Vegetable and Flower Seeds for 1885.*
- Charles Turner, Slough.—*Catalogue of Seeds for the Kitchen and Flower Garden.*
- Louis Van Houtte, Ghent, Belgium.—*Catalogue of Gesneriaceous Plants.*
- John Downie, 144, Princes Street, Edinburgh.—*Catalogue of Vegetable and Flower Seeds.*
- William Paul & Son, Waltham Cross.—*Catalogue of Vegetable, Flower, and Agricultural Seeds, 1885.*
- Kelway & Son, Langport, Somerset.—*Manual for 1885.*
- Edmund Philip Dixon, Hull.—*Catalogue of Garden and Flower Seeds.*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Wine not Fermenting (F. G.).—Your wine probably needs a higher temperature. From 55° to 60° is suitable, and if it does not ferment when kept in a temperature of 60° apply a little fresh yeast on toast, and a change will, we think, soon follow.

Lists of Vegetables (B. J. B.).—Lists of select vegetables have not been published recently, if you mean by "recently" the late autumn. Early spring is the time when such lists usually appear, and they are certain to be forthcoming from experienced and competent persons. There is, however, this great difference in the nature of lists—namely, some having selections of new and choice vegetables regardless of price, others being of useful varieties of moderate price, and this difference should be observed both by writers and readers who are interested in vegetable culture.

Vine Roots (Helvenveld).—We have examined the roots carefully. They were considerably dried, but we consider them to be healthy, natural, and in good condition for supporting the Vines. It is not at all unusual for some of the outer cuticle to peel off when the roots are thickening rapidly. If the Vines are in otherwise good condition for forcing, strong and well ripened, there is nothing in the state of the roots that need cause you the slightest uneasiness; indeed, we do not often receive cleaner and more satisfactory examples. Mulch the borders in the summer—that is, cover them with manure to induce the roots to work near the surface, which they never do if the soil is hot and dry.

Gas Lime for Gardens (An Old Subscriber).—Fresh gas lime is much more powerful and efficacious as a destroyer of grubs than is fresh lime from kilns, but the former is a destroyer of vegetation if not judiciously used. We should not hesitate to apply it at the rate of half a ton per acre, or 4 ozs. to each square yard, if it were carefully mixed with the soil, not thrown in a thick layer at the bottom of each trench, two months before sowing or planting. We have thus applied and found it perfectly safe. The fresher it is the more effective it proves, as if long exposed to the air it is weakened considerably. If the land is much infested with grubs we should apply gas lime now to those parts that would not be cropped before the middle of March, and also give a good dressing of freshly slaked lime from the kiln a week before sowing or planting.

Culture of Crinums (W. J.).—The treatment you have afforded the plants is correct, but Crinums are sometimes very shy in flowering, and we have known plants under the best culture fail to produce their flowers for several years. The coolest part of the stove will be the most suitable position for them during growth, with a cool and dry place at resting time. The compost should consist of turfy loam and leaf soil, or a little peat, with sufficient sand to render it thoroughly porous, as water must be liberally supplied when the plants are growing. One species from South Africa—viz., *C. capense*, is quite hardy in England, but most of the others require to be grown under glass, and all are better for such protection. You will not be able to determine the name of your plant until it flowers.

Tulips Failing (R. L.).—We have examined the bulbs carefully, and have formed a rather strong opinion that their condition is, to a great extent at least, the result of the treatment to which they have been subjected. The varieties do not flower at this season with the same certainty and freedom as do the Duc Van Thols; and it is quite certain they could not do so with the few roots attached as in the examples before us. We strongly suspect that if the bulbs had been left in the plunging material until they had formed at least thrice the quantity of roots as they ought to have had before being placed in heat, that the growth and flowers would have been satisfactory. As it is, the malformed growths represent the matter that was stored in the bulbs, and as the roots were altogether inadequate for sustaining the growth it was necessarily arrested, and hence the unsatisfactory results. We note that three of the bulbs have scarcely started into growth; these we will try, and if they fail similarly to the others we will refer to the subject again.

Mistletoe (A Canny Scot).—Mistletoe grows on other trees besides the Oak and the Apple, but if you desire to establish it you will perhaps be able to do so on the Apple, the Oak, and the Thorn, on all of which we have seen it grow. But it does not appear to grow equally well in all localities, as we have had no difficulty in establishing it on trees in one district and quite failed in another locality; it also probably grows better during some seasons than others, the weather exerting an influence on this in common with other parasitic plants. If you press fresh seeds firmly on the smooth bark of the trees just when the sap is rising, and protect it from birds with muslin or something of that kind, that is all you can do; unless you like to make slight incisions in the bark and insert the seeds in that way. We have tried both methods and found the first-named to answer the better. You had better sow liberally, as if you were expecting not more than one seed in a hundred to germinate.

Cabbages Clubbing (E. T. H.).—No harm could result from your planting in cocoa-nut fibre refuse—that is, making holes and filling them with it before planting, but we suspect it would be better if soot and lime were

mixed with it. Wood ashes used plentifully in the same way are to some extent, and often to a very great extent, useful. Use all the lime and lime rubbish you can obtain. It is questionable if clubbing can exist where there is a sufficiency of lime in the soil, and, your soil being sandy, the probability is that a want of lime is the cause in your case. Mr. J. J. H. Gregory, a most extensive American grower, finds that planting Cabbages too often on the same soils induces clubbing, while it never appears when a proper rotation is observed; but his soil is deficient in lime. Mr. Peter Henderson, another American grower, grows them repeatedly on the same soil and is never troubled with it; but large quantities of shells abound in his soil. Rank manures, unprepared by fermenting, often induce an attack. In cottage gardens where the soapsuds are continually applied to the Cabbage plot clubbing is seldom seen.

Draining and Concreting Vine Borders (Bothered).—If you exercise your own intelligence you need not be greatly "bothered" by anybody. Read Mr. Barron's work on the Vine. He does not "wax eloquent," after the manner of some men of less experience, but teaches common sense, and this is the most useful kind of all. Here is an example that ought not to "bother" you greatly:—"Drainage.—This is one of the most important operations in the formation of a Vine border, and one that in some situations entails a considerable amount of expense and trouble to render it efficient. It is a point that must always be taken into consideration in selecting the position of a vinery, for if the soil cannot be drained freely and easily the site is not a proper one for the cultivation of Grapes. Since Vines will not succeed well in a low, damp situation, it is best to choose for them a rather high position, though not necessarily an exposed one; on a gentle incline, it may be, when the work of drainage will be almost accomplished. Many gardens with gravelly subsoil, even if on the level, are well drained naturally, and so require little preparation; but it is not well to trust too much to natural conditions, though they are apparently favourable. It is better to take all ordinary precautions at the first rather than to run any risks, and after several years of loss and disappointment to have all the work to do over again. In every case, therefore, a considerable amount of draining material should be placed over the whole surface of the bed of the border—say from 1 to 2 feet or more in depth, according to the breadth of the border, the nature of the subsoil, &c. At the back of the border, for example, we should place a depth of 2 feet of drainage, allowing it to slope to 18 inches at the front, where a drain 12 inches lower still should be formed to carry off all superabundant moisture. The best material, generally very accessible, for the drainage of a Vine border will be found in old brick and lime rubbish, the rougher and larger pieces being placed at the bottom, finishing with the finer on the top, these forming a barrier which prevents the drainage materials from becoming choked by the soil being washed down amongst them. In cold, wet, clayey soils it is advisable to place a layer of concrete over the bottom of the border. This will prevent the damp from rising, and cut off any possibility of the roots descending; but even in this case it is still advisable to place over the concrete the bed of brick rubbish, as already recommended. The beneficial effect of drainage is not alone that of drawing off the superfluous moisture, but the consequence of this being done is to raise the temperature of the soil. A well-drained border is not only drier, but warmer by a good many degrees than a water-logged or undrained one. No better illustration than this can be given of the immense importance of thorough drainage for the roots of the Vine."

Names of Fruits (W. Mancey).—1, Headcroft Seedling; 2, Hollandbury; 3, Not known; 4, Ribston Pippin; 5, Broadend. (M. P.)—1, Cellini; 2, Fearn's Pippin; 3, Trumpington; 4, Spring Grove Codlin; 5, Not known; 6, Margil. (V. Martin).—1, Cobham; 2, Blenheim Pippin; 3, Not known; 4, Round Winter Nonesuch; 5, Formosa Pippin; 6, Claygate Pearmain. (Devon).—2, Cockle's Pippin; 8, Devonshire Queen. We are sorry we cannot supply the names of the others, they are probably local varieties.

Names of Plants (Fern).—Your Fern is a rather drawn specimen of *Asplenium fontanum*. We do not think it could now be found wild in England, unless it were in Westmoreland and probably in one or two Scotch localities. It was formerly recorded from Petersfield, Hants, Tooting, Surrey, Matlock, &c.; but there is no record of its occurrence in Kent. It is widely distributed throughout Europe, and rather abundant at a high altitude in the Himalayas. (H. J.).—The Clematis is *C. Flammula*. The white Jasmine referred to is probably *Jasminum officinale*. (J. W. L.)—*Lælia albida*.

COVENT GARDEN MARKET.—JANUARY 7TH.

No alterations to quote. Trade quiet with full supplies.

FRUIT.

	s. d.	s. d.	s. d.	s. d.	
Apples	1/2 sieve	2 6 to 3 6	Oranges	100 4 0 to 6 0	
Chestnuts	bushel	16 0 0 0	Peaches	per doz.	0 0 0 0
Cobs, Kent	per 100 lbs.	55 0 0 0	Pears, kitchen ..	dozen	1 0 3 0
Currauts, Red ..	1/2 sieve	0 0 0 0	" dessert ..	dozen	2 0 6 0
" Black	1/2 sieve	0 0 0 0	Pine Apples English ..	lb.	1 6 2 0
Figs	dozen	0 0 0 0	Plums	1/2 sieve	0 0 0 0
Grapes	lb.	2 0 4 0	Strawberries ..	lb.	0 0 0 0
Lemons	case	10 0 15 0	St. Michael Pines ..	each	3 0 7 0

VEGETABLES.

	s. d.	s. d.	s. d.	s. d.	
Artichokes	dozen	2 0 to 4 0	Mushrooms	punnet	0 0 to 1 6
Beans, Kidney ..	lb.	0 3 0 0	Mustard and Cress ..	punnet	0 2 0 0
Beet, Red	dozen	1 0 2 0	Onions	bunch	0 3 0 4
Broccoli	bundle	0 9 1 0	Parsley	dozen bunches	2 0 3 0
Brussels Sprouts ..	1/2 sieve	2 6 3 0	Parsnips	dozen	1 0 2 0
Cabbage	dozen	0 0 1 0	Potatoes	cwt.	4 0 5 0
Cap sicums	100	1 6 2 0	" Kidney	cwt.	4 0 5 0
Carrots	bunch	0 3 0 4	Rhubarb	bundle	0 4 0 0
Cauliflowers	dozen	2 0 3 0	Salsafy	bundle	1 0 0 6
Celery	bundle	1 6 2 0	Scorzoneria	bundle	1 6 0 0
Coleworts	dcz. bunches	2 0 4 0	Seakale	per basket	2 0 2 6
Cucumbers	each	0 4 1 0	Shallots	lb.	0 3 0 0
Endive	dozen	1 0 2 0	Spinach	bushel	2 0 4 0
Herbs	bunch	0 2 0 0	Tomatoes	lb.	0 6 1 0
Leeks	bunch	0 3 0 4	Turnips	bunch	0 4 0 6
Lettuce	dozen	1 0 1 6			



HIGH FARMING.

THAT high farming and extravagance are synonymous is so strongly the opinion of many persons, that the very mention of it is to them like an alarm signal, and an inducement to regard one as an enthusiast or an ignoramus—probably both; and they may undoubtedly point to many an instance of wasteful lavish outlay by some of the amateurs who rush into farming with a long purse, and the openly expressed intention “to show us how to do it,” and who sooner or later pay dearly for their rashness. Granting fully the folly of all this, it by no means follows that high farming need lead to failure in the hands of a really practical man with a fair share of intelligence and common sense. Regarded dispassionately the term is sound and sensible enough, for then it means that the farm shall be so managed as to afford the highest possible results consistent with true economy of time and labour. Be it understood clearly that by economy we point to the happy mean between wasteful extravagance and foolish parsimony, a liberal expenditure of capital upon animals of the best breeds, upon implements and motive power that are really labour-saving appliances, upon seed of the highest quality, and upon all necessary labour power is the truest, best exemplification of economy. But given all these in fullest measure, we must have a clear head to guide the work and energetic supervision over every part of it.

Now we are fully aware that many a home farmer of undoubted capacity and ripe experience finds his hands tied by insufficient means, which is all the more vexatious from the fact of his knowing that his employer could afford him ample means were he so disposed. Well, we are undoubtedly all more or less the sport of circumstances, and the best thing to do is so to adapt ourselves to circumstances as to make the best of them. We have no faith in forcing a master's hand; far better is it to lead him on to better things by affording him proof that it is worth while and to his interest. This may be done quietly and forcibly, for there is no gainsaying results, and the man who can show a clean bill of health at the end of the year among animals of an ordinary kind shows in the best way that he is worthy of being entrusted with the care of any animals. Perhaps the crucial test just now of one's capacity for management is the production of crops which really pay, and the agricultural outlook would indeed be bad were we obliged to admit that this is impossible.

The farm prize competition held last year under the auspices of the Royal Agricultural Society affords remarkable and valuable evidence of how profitable high farming is in the hands of a clever intelligent man. The first prize in Class 1 was awarded to a farm of 178 acres of sandstone drift, light and in some parts thin and poor in character, 60 acres being arable and 127 under grass. A working capital of £13 an acre is employed, and the published tables show an extraordinary expenditure:—Wages of labourers £153 6s. 2d., servants' wages £67 19s., food for three men and two women £100; total £321 5s. 2d., or 35s. an acre. The outlay for purchased foods and manures in 1883 reached over £650:—Corn and meal £317 2s. 9d., cake £227 5s. 7d., manures £106 3s. 4d., or £3 9s. an acre.

To show how justifiable is this outlay the Judges' report states that the gross receipts from the farm come to between £12 and £13 an acre. An extraordinary outlay in labour, food, and manure is incurred and in rent and rates. Every portion of the work is well done; the land is clean, the stock all good of their kind, and the profits large, and they add the important fact that the great secret of success is judicious high feeding. Full details of the crops, the culture, and the application of manures, as well as of the cattle, sheep, and pigs kept upon the farm are given in the elaborate reports published in the last number of the Journal of the Royal Agricultural Society, and we shall doubtless advert to them again.

The lessons taught by the results of this contest are invaluable. Perhaps the most important one is to do little and do it well, or, in other words, to concentrate our efforts and capital within due bounds. This is strongly enforced by the significant fact that the first prize went to a farm of 187 acres, the second prize to one of 290 acres, and the third or highly commended award to another of 414 acres. Another important fact is that this was a contest of dairy farms, all in a flourishing condition, paying a perfectly satisfactory interest upon capital invested in farming at a time when the cry is so general that farming and bankruptcy are almost inseparable. The proof which the contest affords so clearly that high farming does pay even at a time of great agricultural depression, and therefore always, deserves our best attention, and we may usefully conclude this paper with the

Judges' observation that “Such practice may well be carefully considered by dairy farmers in detail, and by the farming community in general, as indicating lines in which British agriculture may hope to face the future—viz., by increasing the quantity of grass land and keeping more breeding and rearing stock.”

WORK ON THE HOME FARM.

Horse and Hand Labour.—Advantage is being taken of a quiet time upon the land to bring up arrears of carting. We had many faulty places upon the roads which have been made sound. This was not done so carefully as it ought to have been last winter, and it was difficult to get our heavily laden harvest waggons safely to the rickyard. Proceed with carting gravel and soil to mix with lime, which may also be got now from the kiln, and mixed at once; also road sidings, ditch scourings, pond mud, and manure to heaps upon the headlands of land reserved for root culture. In well-stocked yards there should be plenty of manure requiring removal now. This not only lessens the carting in spring when we are so busy upon the land, but it keeps down an undue accumulation of manure in the yards, where plenty of fresh litter should always be spread both for comfort to the cattle and the production of as much manure as possible. Some out-lying meadows which we wish to improve for haymaking purposes are still so dry or rather firm upon the surface that we are able to go on with the clearance of a lot of ant-hills, which did no harm while the land was devoted to grazing; but the mowing machine requires an even surface, and the ant-hills will be useful both for mixing with dung and lime. The carting of timber, faggots, poles, and other wood will also be done as soon as the horses can be spared for it. Do anything rather than put horses upon the land while it is wet and sodden, for the trampling now of heavy horses will do much harm upon soil that is not exceptionally sandy or gravelly. Much good work is being done in replacing old gates and posts with new ones, and in mending gaps in hedges. It is far better to grub an old worn-out hedgerow, and to replant with vigorous young Quick, than to go on with the too frequent repairs, which after all never look well. The cutting of underwood now affords employment to several men. This work is all done by the piece, and the men can earn £1 per week at the following rate of pay:—Hop poles, 14 feet in length, 1s. 10d. per 100; 12 feet 1s. 10d., 10 feet 1s. 2d. per 100; best faggots 5s., and seconds 3s. 3d. per 100; hop poles 3d. per bundle, dogwood for gunpowder 6d. per bundle, Pea boughs 1d. per bundle, withers and stakes 1½d. per bundle, broom handles 2½d. per bundle, thatching rods 2d. per bundle.

Poultry.—With our abundant supply of eggs we were able to spare three sittings for as many broody hens three weeks ago. This may be said to be the first step for our supply of spring chickens, which will produce the highest prices of the year. The cottagers and farmers are so fully alive to this that not an egg is to be had from them at this season of the year. We should like to use an incubator instead of hens for this purpose now, and we should do so with confidence, for we saw such splendid results from an intelligent use of an incubator and foster-mother last autumn that we were convinced of its great practical value.

OUR LETTER BOX.

The Value of Land (W. M.).—The value of land for agricultural purposes is determined by the demand that exists for farms. If, as was the case a few years ago, there are a dozen or more applicants for every farm as it becomes vacant, the rent must inevitably rise; but if, as is the case now, there are no applicants for many vacant farms, the rents must decrease, and much land has recently been let at decidedly lower rentals than were obtained before the farms were vacant. Like everything else the question is simply one of supply and demand. The higher rents to which you allude were the natural result of applicants overbidding each other for the possession of land.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain
	Baromet- er at sea and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1884-5. Dec.-Jan.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
Sunday 28	30.069	35.7	34.5	E.	38.2	38.0	35.5	38.8	34.4	—
Monday 29	29.817	36.0	34.5	E.	38.4	38.2	35.2	43.8	34.4	—
Tuesday 30	29.933	33.9	33.2	N.	38.2	36.4	32.8	41.6	32.2	—
Wednesday .. 31	30.203	33.0	32.6	N.E.	37.8	41.4	23.6	43.8	22.2	—
Thursday 1	30.416	32.4	31.0	E.	37.2	38.9	27.6	37.2	21.2	—
Friday 2	30.234	31.8	30.4	S.E.	36.8	34.4	30.9	34.8	30.1	—
Saturday 3	30.023	33.8	32.2	S.E.	36.6	34.9	30.8	35.5	30.6	—
	30.099	33.8	32.6		37.6	37.5	31.6	39.2	29.3	—

REMARKS.

28th.—Dull throughout.
29th.—Dull.
30th.—Dull and overcast.
31st.—Foggy morning; fine pleasant afternoon.
1st.—Thick and snowlike all day.
2nd.—Dull and overcast.
3rd.—Dull and overcast, cold wind, slight sleet at night.
A cold gloomy week, dry easterly wind, very little sunshine, and small range
tempera —G. J. SYMONS.



COMING EVENTS

15	TH	Royal Society at 4.30 P.M. Linnean Society at 8 P.M.
16	F	
17	S	
18	SUN	2ND SUNDAY AFTER EPIPHANY.
19	M	Meeting of National Chrysanthemum Society at Old Four Swans,
20	TU	[Bishopsgate Street.
21	W	Society of Arts at 8 P.M.

SOME OF THE BEST VEGETABLES.

EVERY season numbers of new vegetables are advertised for sale, some being of sterling merit, and eventually become popular, while others prove disappointing. I do not profess to be in a position to discuss the merits of all that are distributed, but most of the best sorts have come under my notice, and I am sorry to say many that do not deserve to be described as valuable or distinct. To make my remarks as instructive as possible I must repeat that our garden soil is of a heavy nature, and that any sort that does really well here possesses a good constitution, and will prove equally as hardy in most gardens.

Commencing with Beans, as being first on the list, I have only found one novelty of any value in either section. The very long-podded Broad Beans under special treatment produce very fine pods for exhibition purposes, but on the whole we find that Early Longpod, Taylor's and Green Windsor give a good succession, and are really more profitable than the Improved Wonderful, Leviathan, or giant sorts, which, however, yield grand pods if such are coveted. Of Kidney Beans Osborn's Forcing is still the best for culture in pots and the earliest open air crops, while Canadian Wonder and Negro Mammoth Long-podded are the best for the main crop and exhibition. The Girtford Giant Runner Bean, raised by Mr. Laxton, is decidedly superior to and distinct from the old sorts. It does not branch so freely, but crops heavily, and many of the pods are very long and straight. For affording white seed or Haricot Beans we grow the running White Dutch or Case Knife, and the dwarf Carter's Long Sword, and both were unusually profitable last season.

Both Pragnell's Exhibition and Veitch's Improved Black Beets grew much too large to suit us, and that, too, in spite of sowing late as advised by Mr. Pragnell. Pragnell's variety is distinct and clear-skinned, and of good colour when cooked, and is also fit for use very early in the season. For main crop it should not be sown till the first week in May. The Egyptian or the Turnip-rooted is a serviceable early variety, and Dell's Crimson, or one of its synonyms, still the best for the main crop. Broccolis are gaining in numbers, a whole page or more being given up to them in most catalogues, and apparently all are indispensable. We now depend principally upon three sorts, these being Veitch's Self-protecting Autumn, Leamington, and Model. The first named is far from being hardy, but can be depended upon in many seasons for maintaining a good supply from November until late in January, provided care be taken to lift all that are fast developing their hearts, storing them in pits, sheds, or cool houses, where they will be safe from frost. Leamington frequently lasts from March until May, especially if some are lifted and stored on a north border, while Model is very hardy, late, and self-protecting. All are of extra good quality. Other sorts worth growing are Snow's Winter White, which is apparently also sent when Osborn's Winter White is ordered; Veitch's Spring White, Cooling's

Matchless, Ledsham's Latest of All, and Sutton's Late Queen, the latter being an extra good late sort, and we have had it good until June. Purple Sprouting is very hardy and prolific, and fields of it after a hard winter frequently realise high prices in the markets.

Brussels Sprouts of late years have been greatly improved, and failures now are rarer than formerly. The Aigburth is a sure cropper, but the sprouts are frequently much too large to suit all tastes, and Paragon is preferred here, at any rate for the dining-room. Sutton's Reading Exhibition is also a most profitable sort, and in some respects superior to the Aigburth. Of Borecoles or Kales I prefer Read's New Hearting and Asparagus or Buda. The former takes the place of the tall and late green-curled sorts, while the Asparagus is remarkably hardy, very late, serviceable, and good in quality. Chou de Burghley has done well with us this season, but the hearts are too large, and it has yet to be proved by me that it is hardier than Broccolis, and as hardy as Cabbages and Savoys. Cannot Mr. Gilbert improve this Cabbage? for instance, it would be of greater value if neater in habit. Cabbages Reading All Heart and Ellam's Dwarf Spring are of compact growth, and yield heads of excellent quality; and Veitch's Matchless, a rather robust sort, has also done us good service. Savoys Tom Thumb, Early Ulm, Dwarf Green Curled and Drumhead form a good succession, and are worth growing.

Carrots Nantes Horn, James' Intermediate, and Long Red Surrey are all good, the latter being a good keeper, and the former the best for frames, early borders, and late sowings, being on the whole one of the best novelties introduced of late years. Cauliflowers Early Dwarf Forcing, Dwarf Erfurt Mommoth, Pearl, and Autumn Giant are all good, and we find it a good plan to winter a number of plants in frames. This season we are only growing two varieties of Celery, these being Sutton's White Gem and Major Clarke's Red, and I know no better of their respective colours. Telegraph Cucumber is the only variety grown, and if grew any in the winter I should prefer Cardiff Castle, and which is also very good at any time of the year. Endives Moss Curled, Green Curled, and Improved Broad-leaved Batavian are all good, the former being the best for early crops, and the latter hardy and fine in quality. Early Paris Market Cabbage Lettuce is the best for frame work and sheltered borders, and is much liked, and Veitch's Perfect Gem is crisp and good during the summer; while of the Cos varieties we now grow the Black-seeded Brown Cos both for the summer and early crops, and during the spring, summer, and early autumn months a good strain of Paris White Cos is equal to any with more superb names.

Among Onions there is not many to surpass the Giant Zittau, this growing to a good size and weight, and keeping well into the spring. Brown Globe is also grown for late keeping, while I find the Sandy Prize a very good type of White Spanish. The Queen is useful for early crops, and Giant Rocca and Early White Naples are good for autumn sowing. Radishes Wood's Frame, Scarlet and White Forcing are good for frames and warm borders, Red and White Turnip for summer use, and Long Scarlet Short Top for the late crops. The Extra Early Milan Turnip proved superior to the Early Munich for the earliest sowings, and as it makes but little top is particularly good for sowing in frames. Early Snowball, Veitch's Red Globe, and Chirk Castle Black Stone are all good and give a succession, the two last being the hardiest.

Tomatoes probably were never so plentiful as during the year 1884. Some of the best were Dedham Favourite, Hackwood Park Prolific, The Trophy, Phillip's Perfection, now known as Carter's Perfection, King Humbert, and Reading Perfection. Of these I prefer Carter's Perfection and King Humbert, the former as being a heavy cropper, handsome, and extra good in quality, and the latter as being particularly heavy cropping on the open

walls, the Plum-shaped fruit being borne in clusters and of fairly good quality. Muir's Hybrid Vegetable Marrow we grew, but cannot say much about it beyond the fact that it is very prolific, or I should say "they" were, as we had three varieties all being of fairly good quality.

Not many new Peas were grown here last season, and I am inclined to think we now have enough sorts to choose from. American Wonder was again early and good. Veitch's Extra Early proved quite as early and more robust than Laxton's First Early, and these were followed by William J. Telephone again proved the best tall-growing second early, and this was followed by Criterion, this being one of the best Peas grown. Wordsley Wonder grew to about 30 inches in height, was remarkably prolific, pods of medium size and length, and closely packed with sweet wrinkled peas. It is a second early sort, and is decidedly distinct and valuable. Gladiator is a good cropper, and is a useful second early and main crop sort for small gardens, and the same may be said of Marvel. Culverwell's Giant Marrow was of little service, the variety being much addicted to mildew. Evolution and Sturdy are both of medium height, very branching, and prolific, the former having large well-filled pods, and the latter rather small pods, closely packed with delicious peas. Sturdy is not so liable to mildew as the majority of main crop and late sorts are and should be grown in every garden. Walker's Perpetual is another branching sort, in other respects much resembling Veitch's Perfection, and is suitable for late crops, as also are Ne Plus Ultra and Sutton's Latest of All.

Potatoes are not grown in great variety here. We prefer the old Ashleaf and Veitch's Improved Ashleaf for the early crops either in frames or open ground, and to succeed these we have Lapstone, Reading Russet, Schoolmaster, Scotch Champion, and Magnum Bonum. Schoolmaster will be replaced by Ross's new sort M.P., this being somewhat similar in appearance, more prolific, and good in quality.

—W. IGGULDEN, *Marston*.

THE AUBRIETIAS.

TAKEN collectively, the Aubrietias constitute one of the most valuable genera among hardy alpine plants, a family which in early spring time furnishes us with flowers in the greatest profusion. The most ordinary garden soil is suited to their requirements, and while many forms are sufficiently good and choice for the select garden, they also admirably adapt themselves to any variety of circumstances. They can be massed in mixed beds or borders. For edgings or lines, for overhanging ledges of rock, for old walls and ruins for rooteries, or on sloping banks, few plants are so easily established or more quickly carpet the ground than these, and losses are a rarity. Of the almost endless variety of ways in which these plants may be employed to great advantage the Spring Gardens of Belvoir Castle may be mentioned as a suitable illustration. There the visitor will find them on sloping banks or as a margin for beds, and in other cases clothing the sides of huge rugged stones forming the upraised beds, and not the least among their special good qualities is that they are well suited to smoky districts. I may mention an instance where I inserted some small seedlings between the chinks of brickwork in a wall with north-westerly aspect. These, after the first season, made good headway and are now fine tufts, suspended as it were against the wall, which is slightly out of the perpendicular, so as to give increased support to a bank of earth behind.

Aubrietias are readily increased by seeds, by division of the roots, or by cuttings, the two first-named methods being the safest. Cuttings, however, must be resorted to in the cases of extra fine forms, and the best cuttings are to be had during the year in this way: cut the old plant or plants over somewhat close after flowering, when in a week or two quantities of young breaks will form along the remaining portion of the stem and about the base of the plants. When these are from three-quarters of an inch to an inch long strip them off with a heel attached, and without any further preparation dibble them either into pots or pans, or under handlights, in sandy loam; supply water and keep them close until rooted. By following this simple rule not one cutting in a hundred need be lost—widely different from what is invariably the result when cuttings are made from

the old straggling shoots, which are sure to be somewhat wiry. In the case of dividing the rootstock, the cutting-over process may still be adopted. This should be done as soon as the plants have ceased flowering, then allow them to remain a fortnight or so, by which time they will break freely, and the operation may then be more easily performed, and soon compact tufts will be the result. If, however, they are not required for stock, the best way to treat them after flowering is by cutting away the old flowers with a knife or shears, and work some sandy loam and manure among them. This will encourage new roots, and as a natural consequence increased vigour to the plants themselves.

Previous to enumerating some of the leading and most distinct kinds I may mention that I consider the genus itself has been quite overlooked by the florist, and that a wide field for improvement presents itself, like the dwarf alpine Phloxes before the late Mr. Nelson took them in hand some few years ago, and which he did so much to improve. I wonder who would object to an Aubrietia of snowy whiteness, or some decided rosy red tints, something eclipsing (if possible) that lovely gem now nestling in the rich reserve garden of Belvoir. Not only is there room for improvement in colour, but also in size of bloom individually, and, being free seeders, there seems no great impediment in the way; the seedlings also as a rule vary considerably.

Some of the best species and varieties are—A. Bougainvillei; A. Campbelli, probably the brightest in colour and very compact, of which also there is an improved form and bearing the name A. Campbelli Improved; the colour is deep violet blue, and the plant though vigorous is very compact; this is certainly of the best and most useful of the group. A. deltoidea grandiflora is very fine, also a free and abundant bloomer, having, in fact, perfect sheets of bluish-lilac flowers. Then follow A. Eyrei and A. erubescens, both distinct and good. Next in order is A. græca, which is one of the best; the flowers are large, of a light purple colour, habit vigorous, and which can be strongly recommended for spring bedding. The next form is A. Hendersoni, the largest-flowered variety of the group; colour, deep violet purple. Generally speaking, in habit this is not nearly so compact as the majority, the shoots being longer and the leaves larger. Then we have A. olympica with large violet flowers. Besides the above-named there are such as A. antilibani, A. columnæ-cælestis, A. croatica, A. purpurea, and others, the prevailing colour being violet and lavender blue, with varying shades. Of the last named species there is a neat, compact, and very pretty variegated form, unique, so to speak, inasmuch as no other variegated plant so thoroughly frost-resisting is so admirably adapted for permanent edgings as this, and which unfortunately is not sufficiently common.—J. H. E.

VINERIES, VINE BORDERS, AND VINES.

(Continued from page 24.)

Heating—Vineries of the dimensions indicated, irrespective of the length, of which for the production of Grapes for home consumption 32 to 40 feet are suitable sizes, should be provided with six 4-inch hot-water pipes, having evaporating troughs attached to the flows at short intervals. These should be placed thus—four in front and within 16 inches of the wall, and two in the back situated within 5 feet of the back wall, which with the two flows and two returns at the ends of house will afford ample heating surface for ensuring any temperature necessary to the production of good Grapes. In order to insure a good circulation of the heated water in the pipes, which should be supported by 9-inch brick piers where the joints are made, a rise of about an inch in 20 feet must be allowed in the flow pipes, and a couple of inches in an opposite direction may be given in the return pipes. All joints should be made with iron cement, and each house heated by branch pipes from the main must be provided with two gun metal screw valves, and one air vent may be fixed in the box of the flow pipes at the highest point, and be secured to the rafter half way up. If these pipes are attached to an upright tubular boiler properly set there will be very little trouble experienced in stoking and in keeping up the maximum temperatures required in the houses heated by it. We have one here which heats the range of vineries and large central plant-house, together with young men's apartments, packing shed, office, Grape room, and Mushroom house in the rear.

Glazing.—The glass, as already stated, should be 21 oz. sheet, and must be bedded in best old linseed oil putty, allowing three-eighths of an inch lap to the squares, and such of the latter as require it in the roof should be properly spigged with zinc. The glass in the ends and sections of houses should be butted in thin strips of lead prepared specially for that purpose, and fixed so that the point where the squares come together is not visible.

Painting.—Ornamental cresting, finials, guttering, stack pipes, and wirework should have three coats of best oil colour, the ventilating machinery and tie-beams a light blue, and the hot-water pipes above the floor-line with lamp black. The woodwork throughout must have one coat of best red lead priming colour, and three coats afterwards, each coat of paint to be dry before another is laid on. If effect, combined with good lasting colour and substance of material applied to the wood, be cared for in the painting of forcing houses, and I see no reason why it should not be so, the finishing coat might be:—The sashes, sashbars, and inner side of frames and mouldings of door panels and rafters white, and the other parts of rafters, mullions, ridge-beam, door jamb, doors, &c., oil colour; but should only one colour be preferred I would recommend that it be a good dark stone.

Width, Bottoming, Drainage, and Ventilation of Border.—27 feet from the back wall of the vinery will be sufficient width for the border. This, 17 feet inside and 12 feet outside, should have a 9-inch retaining wall 3 feet high from the base of the border, and be 21 inches deep from the floor-line at the back wall, whence a fall of 16 inches in the 27 feet should be given. Unless the subsoil of the border consists of stone or chalk it will be necessary to place 6 inches thick of concrete, composed of five parts of gravel to one of stone lime well incorporated on the bottom, and in which a series of deep gutter bricks set in cement should be placed at the base of the front retaining wall with sufficient fall to carry superfluous water into the waste water drain in connection with the galvanised water cisterns, which must be fixed in vineries and water tanks underneath plant houses, &c. Then lay on the concrete floor rows of horseshoe drain pipes 8 feet apart from the back wall of the vinery into openings specially made in the retaining front wall outside, and in which cast iron "hit-and-miss" ventilating bricks communicating with the air-pipes should be fixed in the outside and second course above the ground line. Connect, as the work proceeds, the several rows of transverse pipes by placing a row longitudinally in the centre in both inside and outside borders, and take a 4½-inch drain pipe up from each row of cross pipes to within a couple of inches immediately under the centre of the hot-water pipes and up to the back wall, and ends (against section walls) of longitudinally arranged pipes a couple of inches above the surface of the Vine border when made, and over each of these pipes place finely perforated zinc lids, so that the air thus admitted to the house may be diffused instead of coming into it with a rush. The advantage of Vine borders, and Peach borders too, being provided with these air-pipes, in addition to keeping the soil sweeter by allowing any noxious gases that might otherwise be generated at the base of the border through the repeated applications of liquid manure and other fertilising agents to the roots during the growing season escaping therefrom, is that fresh air can be admitted to the house irrespective of the weather being wet and windy without the admission of either damp or draughts. Six inches thick of brickbats broken somewhat fine on the top should be laid on between the air pipes for drainage, afterwards covering the same with turves from 1 to 2 inches thick, grass side down, thus completing a sharp and perfect drainage.

Vines.—Concurrently with the building of the vineries the process of striking young Vines to be planted next April or May should be proceeded with. These may be raised from eyes taken from well-ripened wood, of which half an inch may be left on each side of the eye, having the bark and a little of the wood on the opposite side removed with a sharp knife. Insert them either singly in 3-inch pots or several eyes together in shallow pans, properly crocked, filled to within one inch of the rim with a mixture of loam and leaf mould (about one part of the latter to three of the former) pressed firmly together and a surfacing of sand, on which place the barked side of the eyes flatwise, cover with half an inch depth of soil; then, where no better accommodation exists on the place for raising young Vines in, place a box sufficiently deep to admit of the young plants making a couple of inches of growth without coming in contact with the squares of glass, which should be placed over the box after the pots or pans had been plunged therein to the rim in sawdust. These, however, should be removed when the young plants have attained the size indicated, and in the case of those in pans the young plants should be placed into 3-inch pots at once, and then be plunged in deeper boxes and treated as before for a few days until the roots have taken to the soil. Those rooted singly in 3-inch pots will only require the glass being removed for the present. But as soon as the plants have pushed their roots fairly through the soil, they should, like those struck in pans and subsequently placed singly into 3-inch pots, be shifted into 7-inch pots, substituting sifted lime rubble for leaf mould in this potting, and they must afterwards be grown on near the glass and carefully tended until the time of planting them arrives. I have yet a few remarks to make on the formation of borders, the planting therein of the Vines and their after treatment; but they will "keep" for another paper, which will be written in due time. But before concluding this I may say in reference to varieties that Black Ham-burgh, Foster's Seedling, and Buckland Sweetwater are the best for

early forcing, as they are also, together with Madresfield Court, Alnwick Seedling, and Gros Maroc, excellent mid-season varieties. Muscat of Alexandria, Gros Colman, Black Alicante, Mrs. Pince's Black Muscat, Gros Guillaume, and Lady Downe's Seedling are the best late-keeping varieties in the order in which their names appear.—H. W. WARD, *Longford Castle, Wilts.*

ORCHIDS.

[A paper read by Mr. D. Birt before the Caterham Horticultural Society, December 12th.]

(Continued from page 34.)

IN the woodcut (fig. 7) which is reproduced by Mr. Murray's permission from Darwin's work on the "Fertilisation of Orchids," is shown several parts of the column of a *Cattleya* flower. It represents a longitudinal section down the centre of the column. The pistils of the *Cattleya* are three in number, but as they are confluent we may, for practical purposes, speak of them as one, and call them "the pistil." At the bottom of the pistil is an enlargement. This is called the ovarium or egg-bag, and contains the seed. The top of the pistil bends over and ends like the pistil of the Wallflower in a stigma, but the stigma of the *Cattleya* and many other Orchids is remarkable in having a quantity of glutinous matter. This is not to be confounded with the nectar which the insects come to eat. The nectar is secreted

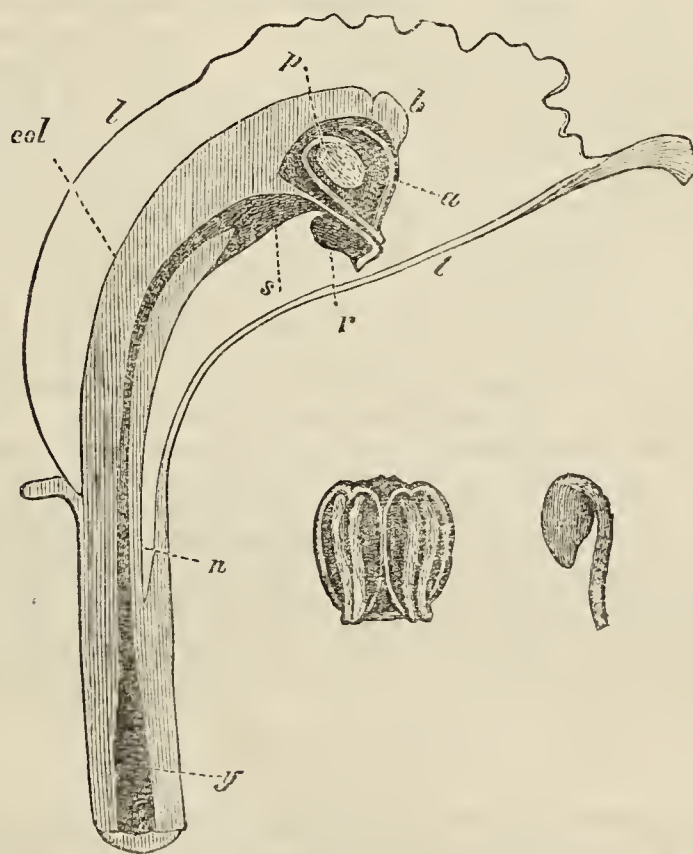


Fig. 7.

B.—Section and lateral view of *Cattleya* flower, with all the sepals and petals removed except the bisected labellum shown only in outline. *a*, anther; *b*, stigma at the top of the column; *p*, pollen-masses; *r*, rostellum; *s*, stigma; *col*, column; *l*, labellum; *n*, nectary; *o*, ovarium, or germen.

lower down, at the base of the lip, and the place is called the nectary. This stigma is obviously well calculated to hold any pollen which may be brought in contact with it.

Here we must note an organ which is not found in common flowers. In the drawing is seen a small disc-like mass opposite the stigma. This is called the rostellum; it also has a quantity of glutinous matter underneath it, and is, in fact, a kind of modified stigma. Its use, however, is not to receive pollen like the stigma proper, but it assists in a most remarkable way, which I will explain presently, in bringing about a distribution of the pollen.

I will lastly call attention to the anther, which is situated above the stigma at the top of the column. The Orchid pollen is in almost all cases not like that of common flowers in the form of dust, but consists of wax-like grains, which in most Orchids cohere in two masses. Each of these pollen masses has a little tail attached to it, which projects a little outside the bottom of the anther case and over the rostellum.

Now let us follow the action of a winged insect, say a bee, who has decided to enter the flower in search of honey. It alights on the lip; it depresses this so that it can easily enter beneath the rostellum. If its weight does not depress it sufficiently to give a free passage it does not matter, for the rostellum readily bends inwards when brushed against, and the

only consequence is that it gets upon its back some of the matter from that organ, which will prove useful presently. It forces at least its head past the rostellum, and forces its proboscis down to the nectary. It gets all the nectar it can, and then retires backwards. At this point its weight would exert less leverage on the lip, the depression of which, being less, the insect would be certain to push against the rostellum and force it outwards. As he does this he contracts mere of the matter from the rostellum, and exposes more fully the tails of the pollen masses. These adhere to the bee's back, and so it flies out of the flower with the pollen attached. It enters another flower, and the stigma of that being highly viscid, is almost certain to attach to itself some of the pollen which the insect brings in contact with it as he forces himself into the nectary. The pollen then shoots out its long slender tubes, which strike down the pistil to the ovules at the base. These thus become fertilised, and the flower having accomplished the purpose of its being, dies in a few hours afterwards. We can therefore have no greater enemy in a house of blooming Orchids than a bee or a wasp. In a few minutes he will fertilise and destroy possibly a dozen or two flowers which might have made a brave show for weeks to come.

The Cypripediums, or Slipper Plants as they are called, have a set of organs not less interesting than those of the *Cattleya*, and though they are less highly organised, they seem equally well adapted for securing cross-fertilisation. The lip or slipper closes over the organs. The stigma is underneath the shield-like projection in the centre of the flower; it is, in fact, the under side of this shield. The stigma is not sticky, but sticky matter is found around the pollen masses. These pollen masses are placed at the extremities of the anthers inside the upper part of the lip. They are two in number, and can just be seen through the upper openings of the lip. An insect, having been attracted inside the lip, cannot retire at the large opening at which he entered. Either the lip is so smooth and shiny, or, as in other species, its sides so bend inwards that if it attempts to crawl out here it falls back into the flower. Its only course is to crawl up the back of the lip, which is an inclined plane, and get out at one or other of the two uppermost openings. In doing this it must of necessity brush against the anther which stands in his path, and take away with him for the fertilisation of another flower some of the glutinous pollen. It passes the stigma before he reaches the pollen, and there is consequently no fear of its fertilising the flower with its own pollen. When it arrives at a second flower, carrying on its head and back pollen of the first flower, a similar journey is repeated. As it passes beneath the stigma of the second flower up the inclined plane in order to get out, some little projecting excrescences which cover the surface of the stigma brush the pollen from off him, and the fertilisation of the second flower is thus completed by pollen of the first.

(To be continued.)



ROYAL HORTICULTURAL SOCIETY.—At a General Meeting of the Fellows held last Tuesday in the conservatory at South Kensington, Mr. Maurice Young, F.R.H.S., in the chair, the following candidates were unanimously elected Fellows—viz., F. G. Barley, R. S. Bond, F. J. Coppin, E. E. Cornaby, Miss M. Tyrwhitt Drake, W. T. Thiselton Dyer, F.R.S., James Flint, Henry Fruen, Mrs. Garbutt, Sydney, Jacobs, Rev. Morgan Jones, Fredk. Knighton, B. D. Knox, Miss Mander, Miss C. Mander, Miss E. Mander, R. H. Measures, R. J. Measures, Admiral Montresor, Mrs. Montresor, Dr. Thos. G. Munyard, William Roupell, Charles Smith, Alfred H. Strong, John Stanton, W. Graham Vivian, B. Wynne.

— THE WEATHER in the neighbourhood of London has become very wintery during the present week. On Tuesday and Wednesday snow fell for several hours, and remained on the ground to a depth of nearly 2 inches. The frost has not been very severe, the lowest temperature registered being 20° Fahrenheit.

— WE are informed that the REIGATE ROSE ASSOCIATION have had Saturday, the 4th July, for their Exhibition.

— A CORRESPONDENT referring to the remarks of "J. A. W.," on page 32, "wishes amateur Rose-growers all the success they can have," and further states that "gardeners are not too proud to learn, and he will be glad if "J. A. W." will give a good practical lesson on Rose-growing in the Journal.

— MR. JAMES GRAY, Danvers Street, Chelsea, is now preparing a CURVILINEAR ROOF FOR A CONSERVATORY IN HOLLAND. It is of handsome design, constructed of cast iron, light and graceful in appearance, but exceedingly strong, with elegant fluted column supports, and all the necessary arrangements for ventilating. The roof will be glazed with flat glass, the rabbets being straight for each length, thus avoiding the expense of bent glass. The conservatory for which it is intended is a remarkably fine building near Haarlem, and has also been heated by this firm.

— A REMARKABLE LIST OF SEEDS IS ISSUED FROM THE JARDIN DES PLANTES, PARIS (Index Seminum in Hortis Musæi Parisiensis), over 4500 species being enumerated. These are arranged under their natural orders, from Filices to Abietinæ, some of the most largely represented being Gramineæ, Compositæ, Scrophularinæ, Labiata, Crucifera, Umbellifera, and Papilionacea. Many very rare plants are named in this list which will prove of great value to the curators of botanic gardens.

— "B." WRITES :—"We are having plenty of TEA ROSES, and, as I think, because we never allow the plants to stop growing. It is well known that Tea Roses in summer continue throwing up fresh crops of buds, and acting on that hint we have in managing Tea Roses, which were wanted all through winter, merely thinned out weakly growths and kept the plants growing without attempting a so-called ripening process. We have also strong-growing sorts planted out in various structures, which commence throwing out their buds at the axils of every leaf without any seeming period of rest."

— THE Annual General Meeting of the ROYAL METEOROLOGICAL SOCIETY will be held at 25, Great George Street, Westminster, on Wednesday, the 21st instant, at 7 P.M., when the Report of the Council will be read, the election of Officers and Council for the ensuing year will take place, and the President will deliver his address.

— MESSRS. ROBERT VEITCH & SONS, Exeter, desire us to announce that they have been recently appointed SEED MERCHANTS TO THE QUEEN. The same firm issue a "Gardeners' Calendar and Almanack for 1885," which contains useful hints for garden operations throughout the year, together with the dates of the principal shows and meetings of the Royal Horticultural Society.

— "F. H., Cobham," writes :—"I have been reading with much interest the articles by Mr. W. Iggulden and others on TRENCHING GROUND, and I would advise those who have clay subsoil to bring up about 6 inches and well burn it, then mix it with the bottom spit and enrich the surface soil. Gardeners will then have the soil in condition to receive liquid manure and well drained. I have worked and burnt 400 loads of clay as above stated, and still continue the practice, as the results are very encouraging."

— A LARGE ARAUCARIA.—"E. R." sends the following—"The Baroness Dowager de Rothschild, who has just taken up her residence at Cannes, has had removed to her villa from the Gulf of Juan an Araucaria, which has not its equal in the country. It weighs 28 tons, and was drawn on a dray to the town by thirty-two horses."

— PARTS 18 and 19 of the ILLUSTRATED DICTIONARY OF GARDENING continue the subjects from Dahlia to Dipladenia. There are numerous illustrations, several of which have originally appeared in our pages, but they are not accompanied by any notification to that effect.

— MR. J. BENNETT, Feldheim, Wimbledon, writes :—"I do not agree with Mr. Muir in his opinion of LORD NAPIER NECTARINE, as I have grown it for several years, and it has proved very satisfactory. Here it is grown in pots. The trees are brought in the house in February and placed between Vines and dwarf Peach trees that are planted out. They remain there until the fruits are gathered, and the trees are then placed out of doors in the full sun until the following year. All the fire heat they have is a little to exclude frost from bedding plants. It is a very free setter with me, as free as any I have. The fruit is of a beautiful colour outside and fragrant, and of very fine flavour. Instead of doing away with it, if I had space I should have another tree. I do not say

that it is the best Nectarine we have, but I think it deserves a place in every collection."

— GARDENING APPOINTMENT.—Mr. J. Downen, late fruit foreman at Possingworth, Hawkhurst, succeeds Mr. Dench as gardener to Sir George R. Prescott, Bart., Isenhurst Park, Cross-in-Hand, Sussex.

AURICULAS.

I THANK Mr. Horner very much for his letter anent these charming flowers, which certainly gives us a ray of hope that at some date we may see them in collections outside the pale of the "few florists' friends" into whose hands they luckily fall, and where, no doubt, I have seen them. What myself and others, especially those of us who may not be within the magic circle, object to is, that these seedlings should be exhibited year after year, thus tantalising the minor luminaries who cannot secure them for love nor money. We are certain of this, that Mr. Horner and his colleagues are not likely to discredit themselves by placing seedlings upon the exhibition table; there is no need for an Auricula in their hands to occupy that position before its merits are well known. I do not for a moment wish to dispute their right to exhibit these seedlings; at the same time surely the strong muster of critical intelligence within the florists' circle is quite sufficient to guard the credit of any one of their number without annually presenting them to the public eye; and when an enthusiast with a spare guinea in his pocket asks Mr. So-and-So to dispose of a plant, he is met with a surprising look, and "Oh! that is a 'seedling' and cannot be sold." Another year he may go through the same ceremony. At the same time there may be a few plants at each of "a few florists' friends," but the public must not have them, because "raisers are bound to act for their own credit's sake." I write with a pretty fair knowledge of the present demand for Auriculas, also of the difficulties attending the increase of some kinds, having in hand nearly two dozen plants of George Lightbody.—T.

NOTES ON GRAPES.

Golden Queen.—I have been much surprised when reading the notices of this Grape that have appeared of late in the columns of the Journal to find so little said in its praise. In the spring of 1876 I planted two vineries 20 feet by 15 feet. Golden Queen was sent out for the first time by the late Mr. Pearson the previous autumn, and among other Vines I ordered a Golden Queen at a guinea. It was planted in an inside border, where the roots could have access as well to one outside the house. In the same house were Muscats, Hamburgs, Madresfield Court, Dr. Hogg, and Mrs. Pince. The latter two I have since cut out. All were grown with single rods on the spur system.

In the third year so vigorous was the growth of the Queen that I found it necessary, in addition to a heavy crop of Grapes, to run up a second rod in order to utilise the superabundant sap. For the last three years I have had a heavy crop on both rods of good-sized bunches with grand berries and perfectly finished. This year the Vine carried twenty-seven bunches, which would average 2 lbs. each, all of which were perfectly ripened. The last two bunches are now sent in from the fruit-room, and I send you with this a few berries for you to judge of their quality. They have been ripe since the latter part of August and are now sweetmeats. The foliage and growth of laterals with this heavy crop was most vigorous, many leaves 12 inches and 14 inches in diameter. The Vine is so strong a grower, so free a fruiter, and so free in setting, that it can hardly fail to make a good market Grape, and to those who want a good cropper and a most luscious Grape, I say Grow Golden Queen.—J. M. M., *North Devon.*

[The Grapes were admirably grown and of splendid quality—quite "sweetmeats," with a rich Muscat aroma, and worthy of high praise.]

ROSE MILDEW.

I HAVE read "C. W.'s" letter, page 39 of the Journal, with much pleasure, and though I had already written a short note on the difficult question of mildew, I propose to suppress it for the present and try to reply to "C. W." I did not directly contradict "C. W.'s" statement that "mildew is more prevalent in wet, cold summers," but I do so now. I say this on my own responsibility, and I think I may claim to be supported in this view by Mr. Worthington Smith, whom "C. W." admits to be an authority. On page 479, last volume, Mr. Smith says, "The spores of Rose mildew very soon perish in the air; they cannot withstand dryness, heat, moisture, or cold," therefore cold wet weather must destroy vast numbers of spores, and can scarcely be said to be favourable to their growth. From repeated observation I have invariably noticed that mildew on outside-grown Rose trees does not fairly begin its ravages till August. Last year, for instance, I did not use sulphur until the second week of that month. Now I think it will be admitted that August was hotter and much drier than July, and with your permission I will give a few figures, culled from the Journal, in support of this opinion. July: Average temperature in shade, 64.2°; in the sun, 112.3°; on the grass, 50°; of soil at 1 foot, 62.8°; rainfall, 2.460 in. August: Average temperature in shade, 65.75°; in the sun, 112.9°; on the grass, 49.07°; of soil at 1 foot, 64.9°; rainfall, 0.894 in.

Mildew was rampant through three weeks of August and September, and after then gradually diminished. I have always found it worst when

we have hot sunny days followed by heavy dews at night. You will notice that the average temperature on the grass is almost 1° less in August than in July, while the July rainfall is two and a half times as great as that of August.

If "C. W." had read Mr. Smith's article as carefully as I did, he would have noticed that sulphur was not spoken of as a "preventive" of mildew, but as a "destroyer," and even then it was the "fumes of sulphur." I think it would be both a difficult and dangerous experiment to apply sulphur fumes to Rose trees growing outside. Further on Mr. Smith recommends sulphur and softsoap to be applied to Roses "badly mildewed;" but that cannot be called "preventing," it is only a "temporary" cure.

The difference between "C. W." and myself is very small. I want to grow Rose trees without mildew. "C. W." does not mind mildew if only he has unlimited supplies of sulphur and softsoap. His Roses would be like a man who enjoys good health as long as he takes medicine. I want mine to be healthy without. The strength of a chain is represented by its weakest link, and "C. W." admits that his remedy "is dependent on a very variable and fickle spring," therefore it is a very variable and fickle remedy. We cannot alter the weather, but I think we can try to find out more than we know about mildew. Why it attacks Marie Baumann and Camille de Rohan, but spares La France and Baronne de Rothschild. Why it only affects Tea Roses (except Madame Berard and Cheshunt Hybrid) to a very slight extent, and Gloire de Dijon not at all. These remarks only apply to outside-grown trees.—T. C. CLAYTON.

GOOD OLD FLORISTS' FLOWERS.

EVERY lover of florists' flowers must be longing for unity between raisers and cultivators. The exhibitor cannot do without the raiser, nor the raiser without the exhibitor; therefore instead of stirring the fire of strife let us hold out the olive branch of peace. After many years' retirement from exhibiting among florists' Carnations and Picotees, I have for some years been preparing to re-enter again into what has been to me a pleasurable contest. When I was a young man, Thomas Hogg of Paddington, Norman of Woolwich, and others were the chief growers, and Mr. Chas. Turner was a young man. Frequently travelling sixty miles in a day before the time of the railways, and as a grower of fifty years, also a winner of prizes in those days, I ask the same question as I asked the veterans at the last year's Carnation Show, Kensington. Have the old varieties been surpassed, although I cannot now procure them? such as Cartwright's Rainbow, C.B.; Gregory's King Alfred, C.B.; Martin's Splendid, S.B.; Flora's Garland, R.F.; Fletcher's Duchess of Devonshire, R.F.; Pearson's Madame Mara, S.F.; and Brown's Bishop of Gloucester, S.F. If anyone is still growing them I should like to obtain them. Although I have the principal leading flowers, such as Master Fred, Muriel, and most of the other modern ones, I am not without some veterans, Ely, Lord Milton, Paul Pry, Beauty of Woodhouse, and Admiral Curzon. Picotees have increased in a marked degree, but I question now if many flowers would surpass my John's Prince Albert, P.P., and Lady Dacre, S.P., which I raised forty-seven years past. Mr. C. Turner complimented me at the last exhibition upon them. When nearly in my teens only Barnard's Mrs. Barnard, S.P., Wood's Agrippina, P.P., were sent out more than forty years.

I trust our friends will look forward to the future with the same pleasure as in times of old, and if we meet in July I hope to be a victor, or to be able to return again to the contest a more successful man.—THOMAS GARRATT, *Bishop Stortford.*

CHRYSANTHEMUM NOTES.

CHRYSANTHEMUMS FOR HOME USE.—Amid the numerous notes which have appeared from week to week in the Journal I looked in vain for some indication of these flowers being of value for other purposes than exhibition. Large flowers and few of them have been in the ascendant, yet for ordinary country house purposes that is just what we do not want. A much safer guide to follow in regard to decorative and cut-flower Chrysanthemums would be the ordinary grower for market instead of the grower for exhibition. I do not intend to enter at large into this subject, but will merely jot down a few facts which I have gathered in cultivating a large number of plants in a few varieties.

At the outset I would say that for ordinary purposes a rigid selection as to sorts is one of the first things to face. Of course in cases where the employer likes a variety of colours this is not possible, but very generally we do not require to consult their taste in these matters so long as plenty of good flowers are forthcoming. White, yellow, and red flowers are the ones which are always preferred at this season, and there is this to be said of white and of yellow Chrysanthemums that they vie with any other flowers in their season. A vase filled with naturally grown stems of Mrs. G. Rundle, each stem standing clear and showing a dozen or more medium-sized blooms, and topped with a large drooping globe of snowy white, is unapproachable for soft chaste beauty in its season. The best white varieties I have had experience of are these—the early-flowering Madame Desgranges, which requires to be opened under glass in order to get purity of white, then Sœur Melanie, which has beautiful foliage, and a most floriferous sort, and in addition continues in good condition when cut longer than any other kind, with the exception of Ethel. Lady Selborne, though it does not stand so long when cut, has the valuable property of continuing in flower longer than any other sort. Mrs. G. Rundle is indispensable, and so of course is Elaine, which is more suitable for single blooms than any other. Then we have Fair Maid of

Guernsey, which generally brings us in our northern climate well up to the end of December. Then comes Ethel, which is not so floriferous as most varieties, but is altogether indispensable, carrying us forward into the middle of January. This, unless strongly grown and allowed a little heat to develop, sometimes shows a black centre, a fault which makes the flower all the more charming. This variety stands for several weeks when cut. At this time (January 7th) we have Mrs. Charles Carey coming on in a temperature of 50° to 55°, to follow Ethel and Virginale in the bud state to come last of all. The yellow varieties we like are Mr. Glenn, Mrs. Dixon, Golden Cedo Nulli, and that most beautiful Japanese variety, Peter the Great. The only really good crimson variety is Julie Lagravère. We are still cutting this from out-of-door plants growing on a mound by a sheltered wall.

Chrysanthemums are such good-natured plants that under very different modes of treatment success may in the end be secured. For instance, very different times for taking cuttings and modes of striking are recommended. I find they do well at any time from December until April. We have already a large batch rooted. The main point we look to is to keep the plants so cool until they can be placed out of doors that scarcely any growth is made until that time arrives. Another point I insist on is a simple compost of pure fibreless loam and cow manure to pot them in, and that to be rammed as firmly into the pots as possible. Then there must be no stint of water at any time, and manurial help is indispensable as soon as the roots have taken well to the soil. We had our past season's stock growing in 4-inch pots up to the second week of August, and I am convinced that by no other treatment as regards compost, mode of potting, and watering would these plants have been worth further attention. Then for several seasons we have surface-dressed the pots at the time of housing, and this, with plenty of water and with artificial heat as required to keep the plants in continuous growth, brings out the flower-producing qualities of the plants to the highest point. Plants for later flowering should be kept quite cool until it is time to bring on the flowers, then place the tops of the plants near to the glass, and allow a low stove temperature to open the flowers fully. As to the size of the pot that is a matter of slight importance. We had plants quite as good this season in 6-inch pots as in any other. Some complain about the foliage falling from the stems in the case of late-flowering sorts. There is no good reason for this, and we have the foliage quite as fresh and fine now as in October.—R. P. B.

LATE-FLOWERING CHRYSANTHEMUMS.—Some inquiries have been made lately regarding late flowering Chrysanthemums, and on page 7 Mr. Orchard recommends Ceres and says it will keep until Christmas. I do not know this variety, but we have a variety here which does not open its flowers before Christmas. To-day (January 5th) it has only two or three fully expanded blooms. The variety is Splendens, and is described in catalogues as yellow tinged with red, very late, and the plant we have fully answers to this description. I cannot say whether the climate (Perthshire) has any great influence in causing this variety to bloom so late or not, and I will be happy to hear the experience of others who know it. Our other sorts are just past and will be cut down in a day or two.—W. LITTLE.

THE NATIONAL CHRYSANTHEMUM SOCIETY.—Mr. W. Holmes, Hon. Secretary of the above Society, sends the following general conditions of affiliation of local and provincial Societies:—

1, That every affiliated Society pay an annual affiliation fee of half a guinea.

2, That the medals of the National Chrysanthemum Society be supplied to affiliated Societies at cost price, also two certificates annually, free of charge; and, in addition, each affiliated Society shall have the right to elect one of its members to the General Committee of the National Chrysanthemum Society, who shall be entitled to two free tickets of admission to the annual Exhibition. Each affiliated Society shall be supplied with an official catalogue of Chrysanthemums free of charge for the use of its Committee.

3, That the medals, in morocco case, be supplied at cost price as follows:—Gold medal, £5 5s.; silver medal, 15s. 6d.; bronze medal, 8s. Each medal to be 1½-inch diameter.

4, That the Society's medals and certificates be awarded only for classes for specimen plants or cut blooms of Chrysanthemums.

5, That those Chrysanthemums bracketed as synonyms in the National catalogue cannot be exhibited in the same stand, and that being so shall be a disqualification in all classes in which the Society's medals are offered.

6, Subject to the foregoing regulations, the Committee of an affiliated Society is at liberty to offer the medals and certificates as they think most advisable.

7, That no Society will be considered to have become affiliated until it has received the sanction of the General Committee of the National Chrysanthemum Society.

8, That each affiliated Society shall pay the amount of the affiliation fee by March 1st, and as early in the year as possible furnish the following information to the Secretary of the National Chrysanthemum Society:—

1, The number of medals required for the current year.

2, The full title of the Society.

3, The name and full address of the Secretary or Secretaries, and also of the members elected to the General Committee of the National Society.

4, The names of the winners of the Society's medals at the previous year's Show, and for what exhibits awarded.

5, The date on which the next Show of the Society will be held.

6, A copy of the schedule of prizes of the affiliated Society to be sent to the Secretary of the National Chrysanthemum Society as soon as possible.

IN SCOTLAND.

PERTH is easily and quickly reached from Crieff, a branch line connecting these towns, so that in journeying northwards from Stirling the tour of the Crieff district can be made *en route*, and in proceeding thence several other good gardens could be visited before arriving in the fair town on the banks of the Tay. For instance, this would be the most convenient mode of including Methven Castle in a tour through Perthshire, which I had hoped to do, for my instructions stated on the best authority that it was well worth a visit. The frank and hearty gardener, Mr. P. Whitton, I had the pleasure of meeting, but time unfortunately would not permit me to extend that pleasure by a call at the establishment under his charge. My next destination was Perth, and thither accordingly I proceeded without further delay. When entering this old and celebrated town by rail a very imperfect idea is formed of its attractions and the surrounding scenery, and it is not until the visitor has climbed one of the



Fig. 8.—Araucaria imbricata at Dupplin Castle.

several hills near it that he can perceive its beauty and fully appreciate the almost affectionate pride with which it is regarded by natives. Scotland's great novelist refers to it in most suitable terms, and equally as fine prospects as that he so eloquently describes can be obtained from several positions. "One of the most beautiful points of view which Britain, or perhaps the world can afford, is, or rather we may say was, the prospect from a spot called the Wicks of Baigie, being a species of niche, at which the traveller arrived after a long stage from Kinross, through a waste and uninteresting country, and from which, as forming a pass over the summit of a ridgy eminence which he had gradually surmounted, he beheld, stretching beneath him, the valley of the Tay, traversed by its ample and lordly stream; the town of Perth, with its two large meadows or Inches, its steeples and its towers; the hills of Moncrieff and Kinnoul faintly rising into picturesque rocks, partly clothed with woods; the rich margin of the river, studded with elegant mansions; and the distant view of the huge Grampian mountains, the northern screen of this exquisite landscape."

The town itself also teems with historical interest. In its immediate neighbourhood is the wonderfully fertile Carse o' Gowrie, while the valleys of the Tay and the Earn abound in beautiful estates and well-kept gardens, many of which would amply repay a horticulturist for a visit. My selection had, however, to be a most rigid one, and the day at my disposal would enable me to include but two establishments in my round—namely, Scone Palace and Dupplin Castle, for they are in opposite directions, several miles outside the town. For the arrangement of several important details in my little programme I was indebted to the kindness of Mr. Macdonald of the Refreshment Rooms, Perth Station, who is an ardent lover of Orchids, and not an admirer only, but a successful cultivator, his collection bearing the well-deserved reputation of being one of the best in this part of Scotland. Like his friend, Dr. Paterson, he has also not been contented with enjoying his favourites himself, but he has made numerous converts, and several increasing collections owe their origin to his enthusiasm.

DUPPLIN CASTLE.

In journeying by rail between Stirling and Perth the traveller cannot fail to notice on the northern side the grandly wooded estate of the Earl of

Kinnoull, which rises high above the picturesque valley of the Earn. The most convenient station is Forteviot, but from this the gardens and mansion are distant nearly three miles, the road for the greater portion of the way rising gradually from the Earn and giving pleasing views of the river through a long avenue of trees. Dupplin possesses much historical interest, extending back over 500 years, for on this fair estate, in the fourteenth century, a great battle was fought, in which nearly 40,000 men were engaged. The present proprietor is the eleventh Earl of Kinnoull, and is descended from a celebrated family, tracing their lineage to Sir John de Haya in the thirteenth century, since which time members of the family have been repeatedly honoured with various titles and dignities, and it is now connected with many of the leading nobles in the north.

flowering, as they do most profusely, must be magnificent; the Azaleas also contributing a wealth of colour early in the year. In few gardens can such effects as these be produced, but wherever there is a natural depression of sufficient depth much can be done by a careful system of planting in this style.

Several windows of the Castle command views of the dell just described, and one of these is termed the Prince of Wales' Room, being that assigned to him when visiting Dupplin, as he has done frequently. The present Castle is a handsome structure in the Elizabethan style and cost £30,000. It is erected on the site of an earlier castle, which was burnt in 1827, and occupying one of the highest parts of the estate some charming views can be obtained from it in a southerly direction. Immediately below runs the



Fig. 9.—THE DELL, DUPPLIN CASTLE.

The site chosen for the mansion is an admirable one for such a princely residence, being about 200 feet above the Earn, from which it rises steeply. In several portions the surface of the hill is cut by most picturesque glens and ravines, and which the art of the landscape gardener has assisted Nature in rendering extremely beautiful, for here, as in the other gardens already noted in this county, the vegetation is exceedingly luxuriant, trees and shrubs of all kinds growing with extraordinary vigour. These glens and their abundant graceful trees are indeed the chief features of the Dupplin Gardens, and on no other estate either in England or Scotland have I seen anything to equal them. That near the Castle, a portion of which is shown in the woodcut, fig. 9 (from a photograph), is one of the most exquisite dells imaginable. The sides are steep and are densely covered with Rhododendrons, Azaleas, Bays, Laurels, and similar shrubs with numerous well-developed specimen Conifers rising to considerable heights above them, and assisting to still farther increase the beauty and diversity of the scene. The Rhododendrons are planted in clumps of one colour each, and the effect when these are

river Earn, while more distant glimpses of the Ochils and the hills of Perth impart much beauty to the scene. This, with the addition of the finely wooded home policies, renders the landscape one of the most pleasing of its kind. The interior of the mansion fittingly corresponds with the exterior attractions, the greatest taste and art being combined in its decoration, not the least interesting feature being some exceedingly fine wood carvings being especially notable in the chapel. The abundant floral decorations are also carried out with great care, a surprising supply of flowers being constantly maintained. Near the Castle are numerous handsome specimen Conifers, but one of special merit is an *Araucaria imbricata*, about 50 feet high, in the best health and clothed with branches to the ground. This is shown in fig. 8 (from Mr. Hunter's work on the "Woods and Forests of Perthshire"), and is remarkable for its symmetry and general beauty, in which respects it could not be surpassed.

Another very striking feature at Dupplin is the handsome avenues which lead to the Castle from four directions. Perhaps the most beautiful of these is the West Avenue, which consists of some magnificent Beches

and terminates in a Roundal of about three acres. These trees are grand specimens of the Beech in its prime, most of them being from 14 to 16 feet in girth, with massive trunks and fine spreading heads. The South Avenue, which leads towards Forteviot, is planted with Limes of considerable age, and which have grown into trees such as are seldom seen, and those who are only acquainted with the stunted or crippled Limes seen in the neighbourhood of our large cities in the south could form any idea of its beauty when freely grown like they are here. The North Avenue leads in the direction of Perth and along this Oaks of majestic dimensions abound, while the pinetum which is passed on the left contains some hundreds of handsome trees in the fifteen acres which it comprises. It is surprising what a number of Conifers thrive in these gardens. *Abies Douglasi* and its variety *glauca* appear especially happy. *Thuja borealis*, *Picea cephalonica*, *P. nobilis*, *P. Nordmanniana*, *P. Lowii*, *P. Pindrow*, *Thuja gigantea*, and *Cupressus Lawsoniana* can only be named as a few of many examples which develop their respective characters to the best possible advantage, and a large proportion have attained a size which can be equalled in few establishments in the north and surpassed in none. In the East Avenue, which, like the one just mentioned, leads towards Perth, are some remarkably fine Beeches with bare trunks rising to a great height and terminating in large heads. Beyond these *Araucaria imbricata* and *Picea Nordmanniana* are planted alternately, which have a capital effect. Between these and in front are clumps of *Rhododendrons*, and in front of these are standard scarlet Thorns, the south side being planted with scarlet Thorns and double-flowering Cherries. This portion of the avenue, it can be readily imagined, is a charming sight in early spring; the white flowers of the Cherry, the brilliant and fragrant ones of the Thorn, and the varied *Rhododendrons* produce a floral display which few gardens can equal. In other portions of the estate are numberless superb trees, Spanish Chestnuts, Cedars, and Silver Firs, in addition to those already named, being grandly represented; in fact, the garden is one great, beautiful, and diversified arboretum, in which most of the trees thrive and attain proportions which render them exceptionally noteworthy. Many an hour could, indeed, be spent amongst them; but a brief glance had to suffice, for there is another surprising department which required attention—namely,

THE FRUIT AND PLANT HOUSES.

In passing Dupplin either going to or returning from Perth, the number of glass houses which on the slope of a hill stand out prominently at once attract attention, and the first impression is that it is some large nursery. Upon inspecting them the same idea might be strengthened in observing the enormous number of plants grown, their excellent health and the careful management which evidently everywhere prevails. The illusion would, however, soon be dispelled by the courteous gardener, Mr. Browning, who would speedily prove that, great as his resources are, they are frequently heavily taxed to meet the demands for flowers, fruits, and vegetables. The garden devoted to the practical and productive portion of the establishment is situated at the lower portion of the hill, but still sufficiently elevated above the river to command a free southerly exposure to the sun. It has been formed on a considerable slope, and in consequence the ranges of houses have been erected on several different levels which, though in a measure disadvantageous at the time of the building, is beneficial in insuring each a fuller command of sun and air. At the highest portion are the bothies, the fruit room, Mushroom house, tool sheds, stabling, and similar necessary buildings all well constructed, then on the south side of a high and substantial wall the houses commence. The first range is over 550 feet long in twelve divisions, which are devoted respectively to Peaches, Roses, Vines, Plums, Nectarines, Figs, and greenhouse plants. This is an extraordinary range, and it would require a small volume to refer in detail to its contents; this cannot therefore be done, and it must suffice to state that in every department the most satisfactory cultural skill is manifest. In front of this range are four others connected near the centre by a verandah 100 feet long and 11 feet wide, the roof of which is gracefully draped with climbing plants, and at the ends with "intermediate" houses, for miscellaneous collections of flowering and fine-foliage plants. *Gardenias* are extensively grown, a house 50 feet long being devoted to them, and some thousands of valuable flowers are every year produced from this structure. The plants are mostly six or seven years old, and are all in pots, but being liberally treated in regard to manurial supplies, moisture, and heat, they grow luxuriantly, are very clean, and flower profusely several times a year. Orchids have several houses appropriated to them, and, like the other plants, make wonderfully strong growths. *Dendrobiums* are especially successful, the proved favourites *D. densiflorum* and *D. thyrsiflorum* being represented by numerous large plants; *D. Chrysoxylum* with forty-eight pseudo-bulbs, is a notable plant; but *D. Calceolus*, with 100 pseudo-bulbs, 4 to 5 feet high, is a very remarkable specimen. This was imported in 1876, and has made astonishing progress in the time. *D. infundibuliformis*, *D. Dalhousianum* (with pseudo-bulbs 4 feet high), and *D. speciosum* (over 3 feet in diameter, with about forty growths) are also noteworthy, the latter being one of the finest examples of the species in cultivation, yet six years ago it was bought for 28s. *Dendrochilum glumaceum* in an 18-inch pot and about 3 feet in diameter is a similarly fine plant, while *Sabralia macrantha*, *Cœlogyne cristata*, *Vanda snavis*, and *Cypripedium insigne* are all vigorous giants. A good collection of cool house Orchids is grown in other houses, including the best *Odontoglossums*, *Masdevallias* and others, which are useful for affording the much-needed choice flowers. The ordinary stove and greenhouse plants are grown in large numbers—some for cutting, and others as table plants. Of the former Mr. Browning finds *Asparagus plumosus nanus*, *A. tenuissimus*, and the ordinary *A. plumosus* extremely useful, while for the latter purpose the *Rivinas* are great favourites, particularly

a seedling from *R. lævis*, which has been raised at Dupplin, and is now employed in preference to the other forms, as it is found to be of rather better habit and to retain its berries longer. These are borne in long racemes, and as the plants have them in various stages of ripening, white, purple, and scarlet at the same time, they have a most graceful and pleasing appearance. Four houses are devoted to Roses, one 50 feet long being occupied solely with Tea varieties. A careful selection of varieties has been made, the most floriferous and best for cutting being chosen, and the majority being planted out yield Roses by thousands, and it is not easy to obtain too many of these valuable flowers. Plants for the usual decorative purposes are grown in great numbers, such as *Eupatoriums*, *Coleuses*, *Begonias*, *Pelargoniums*, *Camellias*, *Abutilons*, and scores of others. In some cases houses are devoted to them, and in others numberless frames are all well stocked.

In the fruit houses the Vines at once command attention by their clean healthy condition, all the most approved varieties being well grown, while of especial note were the Vines of Mrs. Pince, Golden Queen, and Madresfield Court at the time of my visit, which were bearing fine bunches; the two latter were remarkably good, Golden Queen being rarely seen of such a clear golden hue, nor Madresfield Court so well coloured. Amongst the Peaches a tree of Red Magdalen had an extraordinary crop, the fruits of a rich red colour, very handsome. Cucumbers, Melons, and the other indoor fruits already mentioned are equally well grown. Outside the kitchen garden is carefully and thoroughly cropped. Fruit trees are satisfactory, especially the Apricots, which against the upper wall are very healthy and fruit regularly, Moorpark being the variety chiefly grown. One cause of their success, Mr. Browning thinks, is owing to the constant flow of moisture to the opposite side of the wall from the hill above keeping the roots cool, excessive moisture being effectually guarded against by the slope of the land from the wall on the other side, and due attention to drainage. The fact is, however, unquestionable that the Apricots are there all that could be desired.

Much more could be written about Dupplin Castle and its gardens, for it is not nearly so well known to horticulturists as its merits deserve, and all who can admire fine scenery and good cultivation will find a journey thither time well occupied, especially if they are fortunate enough to have Mr. Browning as their guide.—LEWIS CASTLE.

ROYAL HORTICULTURAL SOCIETY.

JANUARY 13TH.

A SMALL but interesting meeting was held at South Kensington on Tuesday last, when Orchids and Apples formed respectively the two principal features. Mr. Ingram's Apples were greatly admired, and the Orchids included several rare and beautiful varieties.

FRUIT COMMITTEE.—Present: J. Lee, Esq., in the chair, and Messrs. G. Goldsmith, S. Lyon, C. Ross, J. Willard, R. D. Blackmore, J. Roberts, J. C. Mindell, J. Burnett, J. Ellam, W. Denning, G. Bunyard, Z. Stevens, and H. J. Veitch. Mr. W. Ingram, Belvoir Castle Gardens, sent thirty-six dishes of Apples "to illustrate the orchard produce of Leicestershire and the capabilities of its heavy soil in fruit-growing, and as a commentary on the report of Messrs. Harrison in their remarks on Leicestershire Apples, page 80 Apple Congress report." They were all remarkably fine; very rarely indeed being such good examples seen in January. A dozen dessert varieties were entered, comprising the following:—Besspool, Ribston Pippin, Cox's Orange Pippin, Pomme d'Api, Golden Russet, Hereford Pearmain, Court of Wick, Golden Winter Pearmain, King of the Pippins, Margil, Old Nonpareil, and one erroneously called Herefordshire Pearmain. Of other varieties the following were the best:—Lord Lennox, Lane's Prince Albert, Peach Apple, Frogmore, Tower of Glamis, Frogmore Prolific, Peach Apple, Rosemary Russet, Hambledon Deux Ans, Mère de Ménage very fine, Peasgood's Nonesuch, Lord Derby, Warner's King, Bramley's Seedling, Blenheim Pippin good, and Gloria Mundi. A bronze medal was deservedly awarded for this fine collection. Messrs. Elsdon & Co., The Vineries, Milton, Cambridge, sent a seedling Apple raised from Blenheim Pippin. It is of very good flavour, and the Committee highly commended the variety, expressing a desire to see it again, when six fruits must be sent. Mr. W. Denning, The Gardens, Norbiton Lodge, sent specimens of Denning's Early Cabbage, which the Committee wish to see in March.

FLORAL COMMITTEE.—Present: G. F. Wilson, Esq., in the chair; and Messrs. E. Hill, J. O'Brien, H. Williams, G. Duffield, J. Hudson, J. Dominy, Shirley Hibberd, W. Kellock, J. James, J. Douglas, J. Child, J. Woodbridge, H. Herbst, W. Bealby, H. Bennett, Dr. Masters, Rev. G. Henslow, J. Laing, and H. Ballantyne. Sir Trevor Lawrence, Bart., M.P., Burford Lodge, Dorking, was awarded a vote of thanks for a panful of a hybrid *Cypripedium*, the result of a cross between *C. punctatissimum* and *C. Spicerianum*. It is a very distinct plant, showing the influence of both parents, the dorsal sepal varying in size from the flat form of *C. punctatissimum* to the semi-funnel shape of *C. Spicerianum*, and like that the greater portion is white, green at the base, with a few brown and purple dots. The petals and lip are greenish brown. It is of strong habit and free in flowering. It may be remembered that a similar but much superior cross named *C. Leeanum* was shown last year. W. Vanner, Esq., Camden Wood, Chislehurst, sent several Orchids, *Odontoglossum Jenningsianum* superbum having very large flowers, white barred with brown. O. Rossi majus was also fine, the flowers of great size. R. H. Measures, Esq., The Woodlands, Streatham, was awarded a vote of thanks for *Odontoglossum Josephinae*, a very pretty variety with narrow white sepals and petals freely dotted with rich brown. Baron Schröder, The Dell, Egham, sent flowers of *Cattleya Percivalliana*, representing one of the best varieties yet shown; also of *Masdevallia Chimæra Shieldsiana*, with large purplish blooms with a white centre and purple dots. It is regarded by some as a natural hybrid.

Mr. H. James Castle, Nursery, Lower Norwood, sent plants of several Orchids, votes of thanks being accorded for the following:—*Odontoglossum*

aureo-maculatum, which is somewhat like a very large and greatly improved *O. gloriosum*, which opens yellow and fades to a pale cream colour with a few brown dots. *Odontoglossum Alexandræ* var. *Trianae*, with large white flowers $3\frac{3}{4}$ by $3\frac{1}{2}$ inches, with petals $1\frac{1}{2}$ inch across, and faintly dotted with brown. *Cattleya chocoensis* var. *amœna*, a beautiful form with white sepals and petals, the lip yellow in the throat with a crimson blotch at the point. A plant of *Odontoglossum Dormannianum*, one of the *O. gloriosum* type, with yellow and brown-spotted sepals and petals. *Sophronitis grandiflora* major, with large and brilliantly coloured flowers, was very fine. A cultural commendation was awarded for a spike of flowers 4 or 5 feet in length, of the remarkable *Vanda* (*Renanthera*) *Lowii*. Mr. J. Child, The Gardens, Garbrand Hall, Ewell, sent blooms of a white *Chrysanthemum*, named *Late Queen*, one of the *Anemone* type. Mr. C. Noble, Bagshot, was awarded a vote of thanks for buds of *Queen of the Bedder* Rose gathered from the open ground after 12° of frost.

Messrs. H. Cannell & Sons, Swanley, sent plants of the original *Cineraria cruenta*, together with specimens of *C. cruenta* Improved, a much finer variety, with larger and richer coloured flowers, very attractive. *Chrysanthemums* Mrs. C. Carey, white Japanese, and *Ceres* (Jackson), Japanese, with flat florets, white and mauve, were also shown with a good collection of *Primula* blooms. Messrs. Page & Son, Teddington, sent three good *Cyclamens*—*Excelsior*, white; *Acme*, pale rose; and *Album plenum*, double white. Mr. Clark, Twickenham, also sent two *Cyclamens*, one of which were certificated. Messrs. Hooper & Co., Covent Garden, sent a basket of *Carnations*—*Isabella Nabonnand*, salmon and scarlet; *A. Alegatiere*, scarlet; *Mdlle. Carle*, white; *Irma*, pink; and *C. H. Hooper*, yellow, red-edged.

First-class certificates were awarded for the following plants:—

Odontoglossum Schraderianum (Baron Schröder).—A lovely Orchid, with flowers of moderate size, the sepals and petals of a white ground, with heavy bars of dark brown, and a yellow blotch in the lip.

Barkeria elegans (F. A. Philbrick, Esq., Q.C.).—A pretty species, with narrow sepals and petals, with a large lip white at the base with crimson dots, and rich crimson tip. This, although long known, is now extremely rare, and attracted much notice from the orchidists present.

Centropogon Lucyanus (Cannell).—An old and useful plant, with tubular blooms, bright rosy carmine, very freely produced in the axils of the leaves. The plant is one of the best of those suitable for decorative purposes in winter.

Amaryllis Comte de Germiny (B. S. Williams, Upper Holloway).—A beautiful hybrid of the *Mrs. Garfield* type, but with red-streaked flowers, each division of the perianth having a central white bar. The plant is strong in habit, with five flowers in a head. The leaves have a faint white midrib.

Cyclamen Albert Victor (Clark).—An exceedingly dark reddish crimson-coloured variety, one of the darkest and richest ever produced. The leaves are neatly marbled, and the plant is strong in habit.

SCIENTIFIC COMMITTEE.—Sir J. D. Hooker in the chair.

Sclerotoids in Potatoes.—Communications were read from Mr. A. Stephen Wilson, Professor Trail, and Mr. G. W. Smith on these bodies. Professor Trail completely confirms Mr. Wilson's conclusions that the clear oval body coated with calcium oxalate is protoplasmic, in that it absorbs magenta. Mr. Smith has renewed his experiments with results still more confirmatory of Mr. Wilson's views. The protoplasm left after treatment with nitric acid exhibits a very feeble cell-wall, such as possibly exists in zoospores, and it is also readily stained and so made apparent. I believe these bodies arise from the moist spots in diseased tubers caused by *Peronospora infestans*, in Mr. Plowright's "spotted tubers." Mr. Smith adds that an independent observer, a gentleman well acquainted with fungi, has repeated the experiments made by Mr. Wilson and himself, and obtained precisely the same results. The strength of the acid is of no importance. The fact is, nitric acid dissolves the oxalate of lime, but for some hours—five to forty-eight, according to the strength of the acid—the encrusted body remains intact.

The following is Professor Trail's communication:—

"A few days ago Mr. A. Stephen Wilson expressed a wish that I should in his company examine the bodies in Potato plants attacked by disease, to which he has given the name of 'sclerotoids,' and in regard to the nature of which a controversy has been carried on for some time. His chief desire was to obtain an unbiased verdict as to the effect on these bodies of treating them with nitric acid, as he felt convinced that the acid did not wholly dissolve these bodies, while Mr. Murray and Dr. Flight have asserted that in their experiments there was no residue left by the acid.

"Mr. Wilson brought a plentiful store of sclerotoids in pieces of leaves in spirits of wine. Of these specimens some were from the Potato crop of 1881, others from the crop of 1884. With some of this material we together experimented on 5th January, 1885; and I have repeated and extended the experiments several times since.

"The conclusions to which I have been led in respect to the nature of these bodies are as follows:—The bodies, probably well known so far as concerns their appearance to all interested in their nature, are small ovals, though considerably larger than the cells among which they lie embedded. They are usually numerous in the tissues in which they are found, and when these tissues are examined by transmitted light they are very evident as dark opaque bodies. When examined by reflected light they are seen to be snow-white in colour, and their surface is slightly rough.

"On teasing a portion of tissue that contains them, it is not at all difficult to detach them more or less completely from the tissue so as to isolate them for more accurate observation; and this is absolutely necessary in the application of tests to these bodies.

"Such re-agents as glycerine, spirits of wine, and acetic acid produced no appreciable effect on them.

"Strong sulphuric acid acts on them but slowly and imperfectly. It renders them more easily broken up, though that is not difficult to do by pressure, or with the needles, to them under any circumstances. In the specimens crushed after being subjected to sulphuric acid there was the appearance of the mass being surrounded with a multitude of very minute needle-shaped crystals or raphides distinct from the central substance which they surrounded.

"Nitric acid laid on a piece of tissue still enclosing the sclerotoids quickly caused their disappearance, so that one might readily have supposed that they had been totally dissolved. But on isolating one of them, and watch-

ing the process carefully from its commencement till its close, which I have done several times, I found in all cases that the body became more or less rapidly nearly transparent as the mineral deposit was dissolved, but that there remained a finely granular mass with all the aspect of protoplasm. This mass was nearly transparent, being faintly yellowish, but retained nearly the size and form of the sclerotoid. On removing the excess of acid and applying magenta to some preparations, and oosin to others, I found that the residual mass took up the dye and became coloured. I have no doubt that the sclerotoids are masses of protoplasm coated with calcium oxalate, probably in the form of minute raphides.—JAMES W. H. TRAIL."

Messrs. Murray and Smith not having been able to report as proposed at the last meeting, it was moved that they should re-examine the sclerotoids and report at the next meeting. Prof. M. Foster suggested the use of other colouring re-agents for testing the protoplasmic basis, such as osmic and chromic acids and picrocarmine.

Lemons with Seeds Germinating in situ within the Fruit.—Mr. Boulger mentioned instances of this, similar to what occurs in *Pernettya mucronata* and *Rhizophora Mangle*.

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

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

Ghost Moth and Pæonies.—Mr. Maclachlan observed that an instance had come before him of the caterpillar of this moth attacking the stems of the Pæony.

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

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

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

Vanda Lowii.—Mr. H. James, of the Castle Nursery, Lower Norwood, forwarded a very fine spike of this Orchid, exhibiting basal flowers of a rich yellow and spotted, all the rest being of the normal red colour, excepting one blossom of an intermediate character. It has been figured and described in Warner's "Orchidaceæ," and Dr. Reichenbach found the yellow flowers to be identical sexually with all the rest, and not monœcious as in *Cycnoches*.

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

NATIONAL AURICULA AND CARNATION AND PICOTEE SOCIETIES (SOUTHERN SECTIONS).

A MEETING of the Committees of these Societies was held at South Kensington on Tuesday last, Shirley Hibberd, Esq., in the chair. There were present: Dr. Masters, Dr. Hogg, Messrs. Veitch, Laing, Turner, B. S. Williams, H. Cannell, J. James, E. Hill, Mr. Douglas, Secretary, and Mr. Rolt, Treasurer. The exhibition schedules of both Societies for 1885 were prepared and adopted. The following regulations for the exhibitions were also adopted:—

- 1, An exhibitor can win one prize only in one class, except in the classes for seedlings, in which there is no limit; and in single specimens he may not exhibit more than two in each class, but may win two prizes with both exhibits.

- 2, At the time when the judges commence their work, all persons present save the officers and their assistants shall retire from the exhibition. The decision of the judges shall be final.

- 3, All plants and flowers shown in the schedule classes must have been the *bonâ fide* property of the exhibitor or his employer at least two months previous to the date of the exhibition.

- 4, Plants and flowers submitted for certificates must be staged separately

from collections, in a place allotted by the Committee, and shall be adjudicated upon by the judges only, save that the judges may, at their discretion, obtain the assistance of other persons in making their decisions.

5, No person shall be allowed to compete as an amateur who publishes a list of plants for sale, or who advertises them in any form whatever, with the exception of seedlings of his own raising.

The Treasurer was instructed to apply to Mr. E. S. Dodwell for a statement of the accounts of the two Societies, and for a remittance of the balance of cash in his hands belonging to the respective Societies.

PACKING CUT FLOWERS.

THERE has been considerable correspondence at various times respecting different modes of packing cut flowers, and it may interest your readers to know the plan I have lately adopted for Chrysanthemum blooms. Boxes made specially for the purpose answer very well for anyone constantly using them, but amateurs and those who only occasionally send away cut flowers require something which is on the spot and which need not be returned. My plan is as follows:—I take a common hat box, which is probably to be found in every household, place a piece of oil silk or gutta-percha tissue (the latter is cheapest) in the bottom, then one layer of flowers with a little damp moss among the stems, after which with a packing needle thread string through the box from side to side, and end to end, close above the flowers; three strands each way will be sufficient. This will form a network on which to place a second piece of gutta-percha tissue, then a second layer of flowers, and the operation can be repeated until the box is full, or, if the box is too large, it can be cut down to the required size. This shape of box is preferable to one of larger diameter, as the latter is apt to allow the flowers to slip into a heap at one end.

By the above mode of packing, Chrysanthemum blooms have arrived at their journey's end after twenty-four hours' confinement, as fresh, to use the words of a recipient, "as if they had just been cut from the plants." The gutta-percha can, of course, be used repeatedly.—R. FALCONER JAMESON.

GARDENING IN AMERICA.

MANY of your readers will remember Mr. J. W. Lawrence, for over twenty years the head gardener at Farnham Castle, Surrey, where at that time there was a fine collection of Orchids. He emigrated with his family to Shippenburg, Pa., in America, a few years since, and in a letter from him written on Christmas Day last, he gives some information which may interest some of your readers. He writes:—"With us, last winter was long and severe, and spring and early summer came together—late, wet, and cool, but we had no rain after the middle of July, and the days hotter and hotter right into October, and the ground dry for about 3 to 4 feet down. Peaches were not so plentiful as usual, and fetched from 1½ to 2½ dols. a bushel. Apples were plentiful from 30 to 50 cents. per bushel. The cider mills were going day and night. Our Strawberries and Raspberries were good and sold well, but I do not like them so well as the English ones, but they bear enormously. The English sorts do no good here, and English varieties of Gooseberries are attacked with mildew. I have quite failed this year with Celery, for the weather kept so hot that it never got a start. What is now sold in town is obtained from Michigan, and sells at from 8 to 12 cents. per head. We are much pleased with the Lima Bean, a runner variety which we shell green and sell it at about 12 cents. per quart. It is also used in a ripe state for soups, but you could not grow it in England, as it will not succeed at Paris. Just now we are bound up pretty tight in ice and snow, with the mercury within 3° of zero the other day. Nothing now to be seen on wheels, but sleigh bells jingling day and night keep us lively. The plough will not enter the ground again until the beginning of April in time for Oats.—W. D. W.

HISTORY OF THE PINE APPLE.—For this, the material is not abundant, or, I should rather say, good material, for the most voluminous writers upon this subject have evidently regarded their imagination as a fountain of facts. There are, however, a few well-authenticated facts in regard to its history. First, Columbus found it growing wild on the island of Guadaloupe in 1493. Second, Baron Von Humboldt found it in the valley of the Orinoco and elsewhere in the uninhabited wilds of South America. Third, at an early period it was found naturalised in Africa, Asia, and the East Indies. This has led some to question its American origin. But the first fact named settles that beyond dispute, for whatever may be said of the passage of the ancestors of our aboriginal tribes across Behring Straits, or the Icelandic discoveries upon north-eastern borders, it is very certain that no voyager from any country where the Pine Apple could be grown ever set foot upon the shores of either the American continent or islands previous to the days of Columbus. It is equally certain that it has been widely distributed by the hand of man, and that, too, at an early period. It is said to have been found naturalised in Java as early as 1599. It was carried to Europe soon after its discovery in America by Columbus, and thence to regions beyond. But it is probable that it was carried to China from Peru by way of the Pacific, and thence distributed to surrounding regions. It is also probable that India derived its first supply from the European stock through Portuguese soon after its introduction into Europe, and thence extended to adjacent countries. Wherever introduced, it at once was conceded a high rank among the fruits of earth, because of its large size, its delightful aroma, and the abundance of its juice of a most exquisite flavour.—REV. JAS. H. WHITE (in *Florida Dispatch*).



HARDY FRUIT GARDEN.

Pruning.—If we were to subject the skill in pruning of any practitioner to a severe test we should certainly take his work now among Peaches and Nectarines—now particularly, and throughout the year generally, for no fruit trees make so great a demand upon one's skill and judgment as these do. In the winter pruning that is now being done vigour, health, and fruitfulness must be kept clearly in view, strictly in the order given, and not reversed, as is so frequently the case. "Fruit before all things," if rightly understood, often—very often—means small fruit, debility, disease. It is of vital importance that the pruner should clearly understand the elastic nature of the Peach and Nectarine, such knowledge being the key to his work, guiding his hands aright, imparting due balance to it, so that the happy mean between under and over-pruning is kept. Before writing this note we had just pruned two large fan-trained Peach trees growing side by side against a south wall. Our treatment of these trees shall serve as an illustration to make clear our teaching. The first tree is a Grosse Mignonne, a fine old tree, which has been in full bearing for many years, and is still sound and healthy, but most of the growth of last year, though firm and well ripened, was small, with single fruit buds and hardly any triplets—an unmistakable indication of debility. Many of the main branches were therefore cut back to 2 or 3 feet from the base, and only fairly strong fruiting wood retained. In consequence of this hard pruning this year the crop of fruit will be reduced by fully two-thirds of the ordinary quantity; but the tree will make growth of extraordinary vigour, all traces of debility will vanish, and when growth ceases in autumn the new main branches will have almost reached the limits of space assigned to this tree. Our knowledge of the healthy condition of the roots and soundness of the border enables us to predict results with confidence, in proof of which we have only to turn to the next tree. This is an Early Beatrice, the fruit of which is never really good when grown under glass; but in the open air it is delicious, and so early that, although we have three trees of it, the fruit is so much in request that we ventured upon overcropping, with the inevitable result of slender growth, and in this particular tree such severe debility that two years ago the whole of the branches were cut back to about 2 feet from the stem. The tree has now quite regained its full size, with growth that is absolutely magnificent both in the main branches and laterals.

Training.—Whether tied upon a trellis or fastened to the wall with shreds and nails, the branches must be evenly distributed, all crowding avoided, and no more string or shreds used than is unavoidable. Fasten each branch and shoot securely in position, but take especial care to allow room for swelling growth and for a free unchecked flow of sap. This advice has special reference to Peaches and Nectarines. Other wall trees must be looked carefully over, decayed or overgrown fastenings removed and replaced with others, and all other necessary training done now as soon as possible. Espaliers and pyramids require looking over, too, for the renewal of stakes and fastenings. Bushes require careful training for the first few years to impart a symmetrical cup shape to them. Care bestowed upon imparting correct outlines to young fruit trees is highly commendable. It is true enough that a misshapen tree may be perfectly healthy and fruitful, but it can never afford the pleasure to one that another trained to perfect symmetry invariably does. See, too, that stakes and fastenings of newly planted trees are secure, for if the roots become loosened in the soil by the swaying of the tree the growth next summer will be the reverse of satisfactory.

FRUIT FORCING.

PEACHES AND NECTARINES.—**Earliest House.**—The trees are now in flower, and artificial impregnation must have daily attention. The camel-hair brush should be passed over the blossoms with ripe pollen about noon each day, and a steady circulation of air secured by opening the ventilators in front of the pipes, which should be sufficiently warmed to raise the temperature to 65°, with 5° to 10° more from sun heat. Discontinue syringing the trees until the blooming is past, but maintain a genial condition of the atmosphere by damping walks, &c., in the morning and afternoon of fine days. If fermenting materials have been introduced a portion of them should be turned over every morning. Allow the night temperature to range from 50° to 55° on mild nights, but on cold nights it may fall to 45°, as it is better to run no risk of failure by adhering to any fixed rules should we have any return to severe weather, which of late has not been favourable to forcing operations; but any time now lost may be made up after the completion of the stoning process. Look well to the condition of outside borders, guarding against sudden chills by keeping the roots well covered up with some dry non-conducting material; a foot thickness of Oak leaves with shutters over answer well, as they form a genial medium for the surface roots, and their gradual removal as the sun gains powers in May may be carried out without injury to the crop.

Second House.—Still continue the syringing of the trees morning and afternoon until the blossoms are expanding and the anthers showing, when it may be well discontinued; but the floors, paths, borders, &c., should be damped. The night temperature may be kept at 45° to 50° on mild nights, falling 5° when the weather is severe. Turn on the heat early in the day so as to raise the temperature to 50° by 8 A.M., at which admit a little

air, keeping it through the day at 50° to 55° by artificial means, allowing an advance of 5° to 10° from sun heat, observing 55° at the point from which to ventilate, and reduce it for the day at 65°, closing the house at 55°; but after the blossoms show colour it is well to leave a little air on constantly at the top of the house. A very important operation in the management of forced Peaches is fumigation for aphides at all seasons of their growth, but more particularly through the early stages; it should therefore be a standing rule to fumigate every house thoroughly before the flowers open, and to avoid the introduction of all plants that are not perfectly free from aphides until after the fruit is set.

Late Houses.—Finish as soon as possible all pruning and cleansing in the latest houses, for although Peaches may be pruned at any time much advantage results from early pruning, not the least if there is the fact that the young wood may be washed two or three times with a much stronger solution of an insecticide than when the buds are swelling. Remove the surface soil down to the roots and supply rather strong loam, to which has been added some crushed bones and burnt earth or charred refuse, and mulch with stork manure. If there be any deficiency of moisture in the border a thorough supply of water should be given—enough to moisten the soil to the drainage. Keep the house as cool as possible so as to retard the flowering.

CHERRY HOUSE.—Continue the night temperature at 40° to 45° on cold nights, allowing 5° more on mild nights, and keep it at 50° throughout the day by artificial means, ventilating freely at and above 45°, observing 55° for closing the house for the day. Syringe twice a day, in the morning and afternoon, the latter sufficiently early to allow the trees to become dry before night, but in dry weather it will suffice to keep the paths moist.

STRAWBERRIES IN POTS.—The earliest plants are now starting, and they are throwing up the flower scapes strongly with the young leaves. This is a good sign, indicating that the crowns have been well ripened, and there is every prospect of a good crop, inasmuch as there will be no loss of vigour in the formation of leaves preceding the development of the flower scape. The weather of late has not been favourable for ventilation, nor has the necessity for it been pressing, but it now becomes a matter of necessity. The temperature of the house should be kept steady at 50° by night, 5° more by day artificially, and 10° to 15° rise from sun heat. Lose no opportunity of admitting air, commencing to ventilate from 55° and increase it with the increased temperature, and close for the day at 65° from sun heat. As the Strawberry is impatient of a close vitiated atmosphere, a little air should be left on constantly at the top of the house, especially when the plants are coming into flower. The walls and paths should be syringed or damped in the morning and early afternoon, ventilating at the first damping, and the house should be closed shortly afterwards; but it is not advisable in dull weather to damp late, as it is important the atmosphere be somewhat dry before closing time. In the case of bright days all the inside parts of the house as well as the plants should be syringed in the morning and early afternoon, and the plants owing to the increased evaporation will become dry before darkness sets in. If there is any trace of aphides the house should be fumigated on two or three consecutive calm evenings, so as to eradicate them before the plants come into flower. Care should be taken to have the foliage of the plants dry.

THE BEE-KEEPER.

BEE-FARMING ON A LARGE SCALE.

I HAVE often expressed my opinion that bee-keeping belongs properly to the rural population provided there is no overcrowding, as two great evils arise from that—viz., the want of sufficient pasturage to enable the bees to gather honey enough to sustain themselves, the second evil being fighting. It has never as yet been fully ascertained how much pasturage is required to provide a hive with sufficient food to support the bees and give a good surplus to the bee-keeper. Even if this could be done there would also have to be an allowance made according to the fertility or sterility of the soil. I can offer very little information on that. All I can say is, that when the pasturage is reduced to one acre to the hive within the radius of about one mile and a half bees never prove profitable. There are many such places throughout Scotland, and where bees do little else than exist until they are moved to richer feeding ground, where they soon make up for any shortcomings they had on their poor pasturage.

There are, however, in Scotland numbers of honey-yielding districts containing many thousands of acres of flowers that are never visited by honey bees, which means a loss to the nation. The many tons of honey that are gathered are comparatively speaking from but a small portion of land, the greater portion being either neglected or inaccessible. I cannot say how much honey might be collected in an average year, but judging from what is collected and the vast extent of surface where bees are not, but if they were the quantity would be prodigious, and would greatly astonish bee-keepers as well as those occupying the land.

A few years since I heard some sheep farmers discussing the

merits of sheep *versus* bees in a commercial point of view, and the conclusion they came to after a little calculation was that there was more value taken that year from the moors in honey than the profits realised from the sheep. It will be observed, however, these calculations were taken from the average rise in the weight of the hives, which is not always realised by the bee-keeper. Then there was no deduction made for expense and bad or unprofitable years, which must be taken into account, and will very soon be learned by these undertaking bee-keeping on a large scale.

At the present time there is a strong desire to launch into bee-farming—a very commendable undertaking provided they do not encroach upon small bee-keepers' territory that may be already stocked. Neither should they form an apiary in a place out of the reach of Heather, and better still, if woods, orchards, Clover and Heather are all accessible either by steamer, rail, or road. In moves by the latter should not exceed twenty miles, but by the former may be fifty miles or even more according to the situation of the home apiary. Two or even three moves may be desirable during the year.

In starting an apiary on a large scale a thorough practical apiarian should be secured to superintend and manage the whole. Assistants will be required during the busy season, and when not required for the bees might be employed in cultivating fruit and vegetables in the ground, so as to have regular employment and be in readiness at any time they may be required. Housing both for men, appliances, and produce must be provided. Spring waggons will also be required both at the home apiary as well as at the distant ones; these, however, need not be expensive. Hives of the Stewarton type, octagon and square, will be found the most profitable and the easiest to manage in a large apiary, but frame and straw hives need not be discarded. The expense for appliances including waggons to carry on the work necessary for the apiary will be about £50, and for every stock of bees £1, or £100 for every 100 stock; and as every stock will require two hives more at £1 each, including cheap covers, say £250, this will include supers. As men will not be required constantly, their wages should not exceed £80. The feeding and expenses for the general working and moving the bees produced from 100 stocks increased to 300 will run between £50 and £100 if extra matings are purchased. The total expenditure, exclusive of housing, will amount to about £600 for first outlay, the annual working expenses after between £150 and £200. The actual money sunk about £400.

If the apiary is fixed at 100 stocks there should be 200 annually to be deprived of their stores, and if the locality and season are good it will be quite within the mark to expect 50 lbs. from each hive. The total, 10,000 lbs., at the current prices should yield £500. Subtract £200 of that for wages and other working expenses, there would be £300 left for interest upon the £400 permanently laid out and still to the good. But supposing that a surplus of honey was to be had only every alternate year, the above figures would still show a handsome per-centage for outlaid money. I have not taken the raising and selling of queens, nor wax, nor swarms, neither has the produce of the soil been taken into account, which I think, with all combined, should pay the rent of whatever ground is occupied.

I have no doubt whatever but that an apiary on a large scale, if judiciously and economically established, would be a profitable investment. The figures I have given are quite within the mark, and in extra seasons a much greater weight of honey might be expended, while the working expenses may be greatly reduced. The wax from so many hives should be worth about £15, and is much superior to foreign wax. The second year an extra number of stocks should be raised from condemned bees, and these kept on the non-swarmling principle would materially add to the income. The foregoing is simply an outline of the probable income and expenditure, but is based on experience, and is a fair guide to those who wish to venture on bee-farming on a large scale.—A LANARKSHIRE BEE-KEEPER.

TRADE CATALOGUES RECEIVED.

- The Penny Packet Seed Company, Loughborough.—*Illustrated Catalogue for 1885.*
 Stuart & Mein, Kelso, Scotland.—*Amateur's Guide and Spring Catalogue, 1885.*
 W. W. Johnson & Son, Boston.—*Catalogue of Vegetable and Flower Seeds.*
 Dobie & Mason, 66, Deansgate, and 22, Oak Street, Manchester.—*Catalogue of Seeds.*
 Barr & Son, 12 and 13, King Street, Covent Garden.—*Catalogue of Seeds for Flower and Kitchen Garden.*
 James Backhouse & Son, York.—*Catalogue of Flower Seeds.*
 Robert Veitch & Son, 54, High Street, Exeter.—*Catalogue of Kitchen Garden and Flower Seeds.*
 Francis and Arthur Dickson & Sons, 106, Eastgate Street, Chester.—*Vegetable and Flower Seeds for 1885.*
 George Bunyard & Co., Maidstone.—*Catalogue of Vegetable, Garden, and Flower Seeds.*
 James Dickson & Sons, 108, Eastgate Street, Chester.—*Vegetable and Flower Seeds for 1885.*
 George E. Elliott, 97, Bradford Road, Huddersfield.—*Catalogue of Seeds 1885.*

Fotheringham & Wallace, Corn Exchange, Dumfries.—Catalogue of Vegetable and Flower Seeds and List of Trees.



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Books (A).—The "Rosarian's Year Book" is published by Messrs. Bemrose & Sons, 23, Old Bailey, London. The price is not stated in the book, but it can be had from the publishers, or Rev. H. H. D'Ombraim, Westwell Vicarage, Ashford, Kent.

Address (Inquirer).—We think you will gain all the information you require by writing to Mr. P. Nicolls, 277, Goldhawk Road, Hammersmith.

Scolopendrium (W. W. W.).—We have no recollection of receiving the specimen to which you refer. Please send another, and it shall have our attention.

Vines Unhealthy—Compost for Border (H. H. S.).—We fail to see any evidence of the attacks of the phylloxera on the Vine roots you have sent; but there are signs of the presence of some corroding matter in the soil. You had better clear out the border, and plant in fresh sweet loam mixed with lime rubbish, wood ashes, a little soot, and bones if you can obtain them, in the proportions that have been recommended in the Journal. A very good formula for a Vine border is given by Mr. Ward in page 480, last volume, November 27, 1884. We say it is good, because we have seen the Vines at Longford Castle, and their admirable condition and excellent crops of fine fruit showed that the right kind of soil was used for the borders.

Alpine Auriculas (R. C.).—Alpine Auriculas need a well-drained site, good loamy soil a foot deep, and not a hot sunny position. They usually succeed well on mounds in which a few stones are embedded, and show to advantage in that way, but mounds are not essential. If the bed is in a position that is shaded from the sun at midday no better site can be desired, but we grow them quite in the open on soil that is naturally well drained. If it were of a wet nature we should raise the beds 9 inches or a foot above the level of the ground, supporting the soil with slates, bricks, or whatever we found the most convenient. A good time for planting is just as growth is starting. When plants are large and need dividing, it is best done after flowering, in showery weather.

Late Rhododendrons (O. C.).—The following are eighteen good late hardy reliable varieties, as selected from Mr. McIntosh's great collection at Duneevan; but the position in which they are grown makes a considerable difference as to the season of flowering:—Apology, Alexander Adie, Charles Nasmyth, Countess of Clancarty, Concessum, Francis Dickson, Hogarth, John Spencer, Lady Falmouth, Lady Annette de Trafford, Lalla Rookh, Mrs. Mendel, Mrs. John Kelk, Mrs. John Clutton, Sir William Armstrong, Sydney Herbert, Sunshine, and Tintoretto.

Vines and Camellias (W. J. C.).—We know of no plants more suitable for permanently covering the back walls of vineries than are Camellias. The temperature requisite for the Vines suits the plants admirably, and they enjoy a rather than otherwise the shade during the summer. Until the Vines cover the roof a little artificial shade may be needed by the plants. We have seen the back wall of ainery covered with white Camellias, and the blooms gathered from the wall realised about as much money as the Grapes did from the roof. Camellias do not like lime, and if you plant them it will be well to exclude lime rubbish from the soil to a width of 2 or 3 feet from the wall. They grow admirably in a mixture of sandy loam and crushed bones, top-dressing with soot as may be needed. Healthy Vines six years old may be successfully transplanted if the work is carefully done, but any removed this spring should be started gently and borne lightly in the summer, the main object being the production of strong growth, to be well ripened for bearing another year.

Potatoes in Poor Soil (J. H.).—Some burned clay, of which you appear to have plenty, spread in the trenches with the sets would be of great service. The finest crop of Potatoes that came under our notice last year was on light land. At the time of planting, kainite at the rate of 8 cwt. per acre was spread in the drills with the sets, and when the Potatoes were nearly ready for earthing a top-dressing of sulphate of ammonia, at the rate of 3 cwt. per acre, was given on a showery day, and the horse hoe run through the land. This dressing induced quick and strong top growth, and a corresponding root-extension for the appropriation of the potassic manure applied in the drills. The yield considerably exceeded 10 tons of marketable tubers per acre of the first quality. This has reference to farm culture practised on an extensive scale by a thoughtful practical man, who could only make Potato-growing profitable by this generous outlay in manures

We repeat the land was light, as such a quantity of sulphate of ammonia would not be justifiable in strong and naturally fertile soil.

Blackening Garden Walls (Inquirer).—It is well known that bodies coloured black absorb the sun's rays, and consequently radiate the heat they have absorbed, while bodies coloured white reflect the rays. From this it has been deduced that walls coloured black are more favourable to the ripening of the fruits of trees trained to them than those that from their colour reflect the rays of the sun. In situations where the greatest advantage is to be taken to absorb solar heat, the following will be found a useful means of colouring the walls:—To every gallon of coal tar add 5 lbs. of sifted hot lime, 2 lbs. of pitch, well boiled together. Apply it hot with brushes. It must not be applied to the branches of the trees. In the case of a wall facing the north and receiving no sun, we found the advantage of limewashing the wall, the additional light thereby obtained greatly benefiting the trees.

Wash for Trees and Walls (F.).—We believe all the recipes are retained in the "Gardeners' Year Book," which will be ready in a few days. Do you mean the following?—"During the dormant months of winter every means should be resorted to for destroying the eggs and larvæ of insects that are injurious to the trees during the period when vegetation is most active; and as these always harbour on the bark and in its crevices, there is no season of the year when their haunts can be so easily invaded and the enemy dislodged as now. For this purpose, then, remove all filth and excrescences from the surface of the bark, such as the old scales, moss, and lichens, with a blunt scraper, such as an old knife or a piece of hoop iron, for it is on these that the pests mainly harbour; then wash the stem and branches well with a mixture of brine and softsoap, applying it with an old painter's brush, and rubbing it well into the crevices. Walls also, and particularly old ones, are capital harbours for insects. Where they are so old as to require fresh pointing, this should be done without delay, and all walls that are not absolutely new, or which in any way afford shelter to insects, should also receive a thorough washing of the same mixture as the trees. In some of the washes lime is recommended, but where the walls are of brick, or even of nice clean stone, those whitened patches always look unsightly in a garden, and we do not attach so much importance to the efficacy of the action of the lime as to consider it an essential ingredient. Softsoap and brine are both sufficiently injurious to insect life, and after their application they leave no unsightly effects behind them." You may dissolve 4 ozs. of softsoap in a gallon of water, and apply at a temperature of 130°; washing with clear water is not needed afterwards, but it is advisable an hour after you have applied tobacco water, &c., to greenhouse plants. We find 1 oz. of quassia chips per gallon sufficient for using with tobacco water.

Wall Protection (Sigma).—We should not add anything to the projecting eaves in the shape of coping of an opaque description, but continue the roof out, say 4 or 6 inches more, which will give you a case well on to 6 feet wide, or it may be any width desired. The continuation of the roof should be of glass, and it ought to be so contrived as to be moveable. The side or front may be of glass, having lights that can be opened so as to allow of ventilation, and they are best when sliding past each other, having a wood plate at bottom with parting laths to guide the lights, and they should be so contrived that they can be removed at will, for from early June until September the trees will be improved by full exposure, also again in December after the house is cleared of Chrysanthemums until the blossom buds are swelling and commence showing colour in February or March. It would not injure the trees to enclose the front with glass, but on the contrary would be a great aid in protecting the blossom and embryo fruit from spring frosts, also in late summer in ripening the wood should the weather then be cold and wet. Chrysanthemums introduced in October would not injure the Peach trees in the least if you admit air on all favourable occasions, and do not employ more heat than is absolutely necessary to exclude frost, which is all the protection Chrysanthemums need to have them preserved in perfection as long as possible. Fire heat, or means of affording it in spring, would be a great help to the Peach blossom should the weather prove dull and cold, as well as to save them from injury by frost in severe weather. We are glad to hear of your success with Grapes, but the Vines were probably somewhat overcropped.

Apricot Culture in Pots (J. H. W.).—Apricots succeed quite as well as other descriptions of fruit trees in pots. The chief point in their cultivation under glass is to give them plenty of air, and allow them unobstructed light. They succeed when forced under the treatment given to Cherries and Plums, with the difference that after the fruit is stoned they require a temperature somewhat higher, or about 5° more than is accorded Cherries. Messrs. Rivers, Sawbridgeworth, Herts, we believe still supply fruiting trees in pots, both as pyramids and bushes. If you procure maiden trees we should train them as pyramids. They should be potted so soon as received in 10-inch pots, using good turfy loam, with a sixth of old mortar rubbish added, a fifth of well-decayed manure, and a twentieth of crushed bones. Drain the pots efficiently, and ram the compost as firm as possible. The trees must be grown under glass right away, although after the wood is ripe and the foliage falling they may be plunged outdoors, and remain until the middle or January or early February. Unless the growths are strong and long they need not be shortened, or at least only have the unripe points cut back to firm ripe wood; but in order to form a good pyramid they should be headed back to 13 inches, a leader taken up, and the side growths stopped at 6 inches of growth, and this repeated for about three years, when the trees will be in a bearing state. This will insure the trees being furnished to the base, yet we think upright cordons quite as good as pyramids, and bushes are equally eligible. Abundance of light, plenty of air, and maintaining a somewhat drier atmosphere when the trees are in blossom than would be considered advisable for other fruit trees are the chief essentials, forcing very gently in the early stages, and not beginning until early December, in order to have ripe fruit in May and early June. The best kinds for pot culture are Oullins Early Peach, Large Early, Early Moorpark, Kaisha, St. Ambroise, Moorpark, and Peach.

Tuberous Begonias (J. W.).—You must excuse us if we are unable to accept your "fact" that these plants are "losing popularity from the difficulty of inducing free growth." Some of the varieties grow more freely than others, no doubt, but the fact remains that thousands of persons have

no more diffi-ty in growing Tuberous Begonias than they have in growing Zonal Pelargoniums or Calceolarias. We suspect your method of culture is faulty in some respect. That the soil is not the sole cause of failure is apparent from your statement that your "seedlings after transplanting did no good, though they did moderately in the seed-pan in the same sort of earth." You do not state either the temperature or conditions under which your plants failed. You observe that some persons condemn and others recommend peat; no doubt that is so, and both may be right, because some kinds of peat may be suitable, while others may be poisonous. The conflicting opinions as regards liquid manure may not really clash. To give such stimulants to plants in their early stages may be injurious, but to plants that have filled the pots in which they are to flower with roots—plants varying from 3 to 6 feet in diameter with stems as thick as walking sticks, and covered with large flowers, we know that clear liquid manure is of the greatest service. But to the soil: we do not use peat; the seedlings are raised in equal parts of sandy loam and leaf soil, sifted, kept moist, and covered with a square of glass in a temperature of about 65°. They are pricked off into boxes of the same kind of soil, and kept in the same temperature and not in a dry atmosphere. When potted a mixture of two parts turfy loam, not sifted, one part leaf soil and one part dried cowdung, the two latter passed through a sieve, adding sand to render the whole porous. In this they grow luxuriantly in a temperature of 55° to 60°, the pots stood, not on a dry open stage, but on a moist stand of fibre or ashes, and the plants are watered carefully, yet sufficiently at all times. Dry heat, dry soil, and a draughty atmosphere will nullify the effects of the best soil that could possibly be prepared. The tubers start well in cocoa-nut fibre refuse, and this may be mixed with the soil in the absence of leaf mould. If you need further information please state your conveniences for growing the plants, and the temperature and nature of the structures in which you have hitherto failed.

Vegetables for Market (E. B.).—By good management you may annually realise the amount you name, especially if you can arrange with a respectable greengrocer to take all your vegetables at a fair price. You seem to think that trenching will improve the working of the lower portion of your garden, and which is naturally clayey and heavy, whereas the contrary would probably be the case. Trenching or bastard trenching improves both exhausted and too rich surface soils, and also insures a much deeper feeding ground for the roots; but the amount of subsoil, whether little or much, that is unavoidably brought to the surface would, in your case especially, be the means of spoiling its free working for some little time to come. Read well what has lately appeared in these papers on the subject of trenching, notably by "J. L. B.," on page 5, and if you decide to trench any part of your ground this season let it be the upper half. Early vegetables usually pay best, and we should advise you to crop the sloping ground with early Potatoes, Lettuces, early Carrots, early Cauliflowers, Kidney Beans and Cabbages, or the first and last-named only. All of these could be cleared off in time for a second crop of Autumn Giant Cauliflowers, early Broccoli, and winter salading. The heavy land might be cropped entirely with Brussels Sprouts, or, if you prefer it, a few rows each of Onions, Beet, Savoys, and Celery may be grown. We can recommend the following sorts for your purpose:—Potato Veitch's improved Ashleaf, Lettuces Paris White Cos for summer, and Hicks' Hardy Cos to stand the winter, Carrot Nantes Horn, Cauliflower Early Dwarf Mammoth, Kidney Beans Osborn's Forcing and Canadian Wonder, Cabbage Heartwell Marrow, Savoys Dwarf Elm and Drumhead, Broccoli Veitch's Autumn Protecting, Snow's Winter White; and if any are wanted to stand the winter try Leamington and Cattell's Eclipse, Onions White Spanish and Giant Zittau, Beet Dell's Crimson, Brussels Sprouts The Aigburth. The plants of early Cauliflowers may be bought in the spring, but the rest we should prefer to raise from seed, no frames being necessary for the purpose. You will find useful information as to the best times for sowing, &c., in the weekly calendar of this paper. We doubt if there is any book that would not perplex as much as it would instruct you. First arrange with a greengrocer to purchase your produce, and we shall at any time be ready to advise you on the culture of the different crops. No doubt, also, you could find a purchaser for cut flowers, such as Stocks, Asters, Cloves, Pinks, Wallflowers, and any other which grow well in suburban gardens and are profitable.

Destroying Tree Stumps with Dynamite (T. L.).—Mr. J. Smith has described, as follows, the method of destroying tree stumps at Mentmore, and which was found cheaper and quicker than destroying them with blasting powder:—"In the park here we have recently been felling trees for the purpose of doing away with the hedgerows and crowded appearance of this part of the estate, to improve the landscape and allow the trees which are left to fully develop themselves. Owing to most of the trees having grown in hedgerows they have formed much stronger roots than if they had been grown in a wood, therefore more labour and explosive were required to take them out of the ground. The tools or implements required are of simple description—viz., earth augur, which is similar to an old-fashioned wood augur, 2 inches in diameter at the bit end, about 4 feet long, and fitted with a slightly hollowed shield or cap, which the man fits against his chest when boring—this is used for boring holes between the fangs; a crowbar, grafting, and stock axe. These are all the implements that are required. The operation is as follows:—Suppose a large root is to be removed out of the ground, a hole is made with the earth augur between two of the strongest fangs; this is put in at an angle so that the bottom of the hole is as near under the centre of the root as is possible; the hole is then charged with a few cartridges of dynamite according to the size and strength of the root. A primer cartridge containing cap and fuse is then inserted on the top of the charge, and the whole rammed down with loose earth by a wooden rammer. The end of the fuse is then lighted; this explodes the cap, and that in its turn the dynamite, and the whole mass is usually blown out, breaking up the root into convenient pieces for loading up or burning. The fuse is cut off at sufficient length so as to allow the workmen to get out of danger, which is usually from 50 to 100 yards, according to the strength of the charge. After the charge has exploded seldom anything remains but a large hole much resembling the bed of a boiler. I took particular notice that no damage whatever was done to the surrounding trees. We had nearly four hundred roots blown out by this process; and with two of our common labouring men, with one man sent by the agents representing

the Dynamite Company, Messrs. Johnson & Co., Dudley, we have been able to remove from twenty-five to thirty per day of roots averaging from 1 foot 6 inches to 4 feet 6 inches in diameter. I find from careful calculations made that we have been enabled to remove the roots in a far more expeditious manner than hitherto at 50 to 60 per cent. less cost." But it is right that we append a warning which followed the publication of Mr. Smith's experience. A gentleman who has used the explosive extensively wrote to us:—"Mr. Smith has perhaps never seen dynamite behave otherwise than well, and was not informed by its vendors that it possesses peculiarities which make it far from an innocent substance fit to be entrusted to any inexperienced hands, otherwise I think he would have mentioned the following points, which should be known by all employ it:—1st, Dynamite, or rather the nitro-glycerine contained in it, freezes at about 43° Fahr., and it is not safe to use it in that condition. 2ndly, Thawing it should be done at a temperature not exceeding that of boiling water; neglect in this respect has caused disastrous explosions. A favourite plan with miners is to put the frozen charges into their breeches pockets. 3rdly, Keeping it in the damp should be avoided; moisture tends to make the oily nitro-glycerine exude, and this in the free state is highly dangerous. But in supplementing your account with this brief warning I have no wish to take away the character of what is undoubtedly a most valuable explosive, more especially for blasting in wet ground or under water. For the latter purpose I have used some tons of it, happily without accident; but I should never allow it either to be kept or employed except under an experienced eye. One safeguard, indeed, against its adoption for blasting purposes is the difficulty of getting it in most places, for railway companies will not carry it at any price." When dynamite cannot be used blasting powder may be employed, placed in deep holes made with augurs, cartridges of it with fuses attached to pass through clay, which is pressed down over the charges. The fuses should be of such a length that the workmen can retire to a safe position before the explosion occurs.

Names of Plants (Subscriber).—1, Pinus Lambertiana; 2, Abies Smithiana; 3 and 4, varieties of Abies orientalis; 5, a Taxus, probably T. adpressa; 6, Abies Menziesii. (H. Q.)—1, Adiantum assimile; 2, A. concinnum; 3, insufficient; 4, Pteris serrulata cristata.

COVENT GARDEN MARKET.—JANUARY 14TH.

MARKET well supplied, but business keeps quiet. Best samples of Grapes firm, but second quality heavy. Prices as last week.

FRUIT.

		s. d.	s. d.			s. d.	s. d.
Apples	.. .. ½ sieve	2 6	to 3 6	Oranges	.. .. 100	4 0	to 6 0
Chestnuts	.. .. bushel	16 0	0 0	Peaches	.. .. per doz.	0 0	0 0
Cobs, Kent	.. per 100 lbs.	55 0	0 0	Pears, kitchen	.. dozen	1 0	3 0
Currants, Red	.. ½ sieve	0 0	0 0	,, dessert	.. dozen	2 0	6 0
,, Black	.. ½ sieve	0 0	0 0	Pine Apples English	.. lb.	1 6	2 0
Figs	.. .. dozen	0 0	0 0	Plums	.. .. ½ sieve	0 0	0 0
Grapes	.. .. lb.	2 0	4 0	Strawberries	.. .. lb.	0 0	0 0
Lemons	.. .. case	10 0	15 0	St. Michael Pines	.. each	3 0	7 0

VEGETABLES.

		s. d.	s. d.			s. d.	s. d.
Artichokes	.. .. dozen	2 0	to 4 0	Mushrooms	.. .. punnet	0 0	to 1 6
Beans, Kidney	.. .. lb.	0 3	0 0	Mustard and Cress	.. .. punnet	0 2	0 0
Beet, Red	.. .. dozen	1 0	2 0	Onions	.. .. bunch	0 3	0 4
Broccoli	.. .. bundle	0 9	1 0	Parsley	.. .. dozen bunches	2 0	3 0
Brussels Sprouts	.. ½ sieve	2 6	3 0	Parsnips	.. .. dozen	1 0	2 0
Cabbage	.. .. dozen	0 0	1 0	Potatoes	.. .. cwt.	4 0	5 0
Capsicums	.. .. 100	1 6	2 0	,, Kidney	.. .. cwt.	4 0	5 0
Carrots	.. .. bunch	0 3	0 4	Rhubarb	.. .. bundle	0 4	0 0
Cauliflowers	.. .. dozen	2 0	3 0	Salsafy	.. .. bundle	1 0	0 6
Celery	.. .. bundle	1 6	2 0	Scorzoneria	.. .. bundle	1 6	0 0
Coleworts	.. .. doz. bunches	2 0	4 0	Seakale	.. .. per basket	2 0	2 6
Cucumbers	.. .. each	0 4	1 0	Shallots	.. .. lb.	0 3	0 0
Endive	.. .. dozen	1 0	2 0	Spinach	.. .. bushel	2 0	4 0
Herbs	.. .. bunch	0 2	0 0	Tomatoes	.. .. lb.	0 6	1 0
Leeks	.. .. bunch	0	0 4	Turnips	.. .. bunch	0 4	0 6
Lettuce	.. .. dozen						



DAIRY FARMING.
WINTER.

REGARDED from the home farmer's point of view, dairy farming before all things consists in the maintenance of full daily supplies of milk, cream, and butter throughout the year, and the management of his herd of cows must be influenced by such requirements; and it is therefore peculiar and altogether different to that, for instance, of a midland dairy farmer, whose cows are almost all dry now, owing to the fact that they are all to calve early in spring, when cheese-making will begin, and continue in full swing throughout summer and autumn once more. In such a dairy there is an annual period of rest, extending over several weeks in winter, precisely at the best season of the year for cessation of cheese or butter-making, preferably of the former, for butter rises in price now, while cheese continues at its normal value. We, however, must indulge in no such rest, and we have therefore to try and manage to have one or two

cows calving at intervals of a few weeks throughout winter. We say try and manage advisedly, for any thought of precision in the successional calving of cows is a delusion. In vain do we arrange our plans with the greatest nicety and care, for failure in some degree is inevitable; cows wear out, become barren, or do not breed as was expected; heifers fail to answer expectations formed of them, and so, unless we have an extravagant surplus number of cows, it occasionally becomes a difficult matter to satisfy home requirements fully. Just now our supply of milk has fallen so low that very little more than half the quantity of butter wanted is made, and we have had to fall back upon our ample store of butter potted last summer when the grass was at its best. This butter is of a full rich yellow colour, and of such fine flavour that it answers our purpose admirably.

In another fortnight four cows are due to calve within a day or two of one another—a Jersey, a Guernsey, a cross-bred Alderney, and a cross-bred Shorthorn. A little later on there are others to follow, and among them a Kerry heifer of high promise, which was put to a Guernsey bull, and if our hopes of getting a cow calf from this heifer are realised it is likely to prove a valuable animal. Our valuable little black Kerry, which gave sixteen quarts of milk a day, went barren, and became so lusty and fat upon grass that it had to go to the butcher.

At midwinter cows should be quite settled in their yards, and be quiet and contented. An ample store of dry litter is of almost equal importance to enough good food. At milking time they have now bran and sliced Mangolds, they are then turned out to the hay cribs, filled in readiness for them now with such hay as we do not often have, and it is all alike green and fragrant as a posy. Then when each cow's paunch is full comes the much slower process of rumination, and each animal seeks its favourite place in the yard on a fine day, or in the open lodge on a wet one, and it lays down by preference, but occasionally stands. A weakly cow that is liable to be driven and hurt by the others generally stands if it is out in the yard during rumination, and in rough or wet weather we always have such cows shut up in separate light airy lodges by day as well as at night. Now a thoughtful cowman will take care to have plenty of dry clean litter down in readiness for his cows to lay upon always, for he knows, or ought to know, that this is necessary for health quite as much as for comfort. Depend upon it a heavy animal which has nothing but a mass of litter sodden with moisture to lay upon, runs great risk of a severe attack of pleurisy, and therefore not only should it have a clean dry bed in contact with its body, but that bed should rest upon an equally dry floor. Many a case of illness, many a loss of valuable animals, is traceable to foul litter in sheds, covered it may be occasionally with dry litter, but nevertheless in the first stages of fermentation, and constantly giving off poisonous gases. We had no veterinary surgeon's bill at Christmas nor have we had a case of severe illness among cattle for many months, and this is in a considerable degree owing to the due exercise of cleanliness combined with care in other matters.

Early in the present month we were driving past a large home farm where a fine herd of some twenty cows are kept, and to our surprise the whole of them were out upon the grass and laying down, for it was early, and they had apparently been turned out with full paunches. For what? There they lay upon the cold sodden ground quietly chewing the cud, but some of them were pretty certain to suffer from attacks of pleurisy or rheumatism subsequently. It is undoubtedly right to let cows run out upon grass by day as late in autumn as possible, but in winter, when growth has ceased, the cows should be confined altogether to the yards. Be it our care that both lodges and yards are as comfortable as we can make them. All animals require exercise, and it is well to avoid extremes in our treatment of them. They should neither be kept constantly tied up in stalls, where we sometimes see them with barely room to lay down, nor turned into yards so badly drained that the litter is saturated with moisture. We have seen yards so bad that we should not have liked to venture to walk across them, and yet buildings and enclosures were excellent. Avoid extremes we again say, and remember that comfortable quarters promote health.

(To be continued.)

WORK ON THE HOME FARM.

Horse Work.—That horses should be kept off the land while it is so tender as it generally is in January is right enough, but to have horses standing idle in the stable day after day is wrong, and is an indication of faulty management. The home farm should be as entirely under the control of the steward as other parts of the estate, so that he may turn it to best account at all seasons of the year. He then takes care to keep timber-carting and other horse work in the woods in reserve for this period of the year. Underwood, too, is not sold uncut by auction, but is cut by men drawn from the home farm, who are thus enabled to earn

excellent wages in winter, and it is a means of keeping a staff of skilful labourers upon the estate always, which is decidedly preferable to taking on untried men at the busiest season of the year, when we require every stroke to tell home. To cut underwood, and to deliver as much of it as possible by waggon to the purchaser, is the plan we have found answer best. In some instances, where woods are very extensive, recourse must be had to auction sales, but such sales ought always to be avoided when possible. The salesman's commission, the annual dinner, and the buyers' profits, are items of expenditure which ought not to be found in the accounts of any but large estates.

Live Stock.—A slight tendency to scour was perceptible among the tegs upon Mustard, and they have now chopped hay regularly, as well as acorns, of which we have still a considerable quantity. A fresh supply of rock salt has also been distributed among all the animals. If the tegs were required for sale or killing soon, crushed corn and bran would be added liberally to the chopped hay, but we require a supply of three-year-old mutton, and therefore avoid the high-pressure system, under which most sheep are now forced to early maturity. A few sheep still remain of a flock having the taint of foot-rot. They are in excellent condition, and are being used as fast as possible, other sheep being kept entirely away from them, and we hope when these sheep are gone to have done with foot-rot. Preparation for the lambing season must now be made. Large lodges with yards having high enclosures are best, failing which tolerably snug quarters for the ewes and lambs may be contrived with thatched hurdles. Avoid exposure to cold cutting winds, which invariably proves fatal to many lambs. Select a warm sheltered meadow, and keep them there till the lambs are strong enough to bear some exposure. It is during the first few weeks of a lamb's existence that constant care is necessary, as it is certainly profitable, for with such attention there need be hardly any losses. Of the other things to be got in readiness for the lambing season we shall call attention next week.

"PURDON'S IRISH FARMERS' AND GARDENERS' ALMANACK."—This useful annual, published at the *Irish Farmers' Gazette* Office, contains the usual serviceable calendrical matter, with articles on Cattle-feeding, Rot in Sheep, Weights and Measurement of Animals, Measurement and Weight of Hay, Manures, and various tables which the agriculturist can consult with advantage in the prosecution of his duties throughout the year.

OUR LETTER BOX.

Chickens Dying (P. M.).—Your birds are suffering from some form of inflammation brought on by the highly unnatural treatment which you adopt. A cement floor unless covered at least an inch deep in dry earth, sand, or ashes is about as bad for them as could be, while to confine them to an outhouse with a fire would kill them later on with leg-weakness if they stood the other treatment. Coop them out under an open shed or in the open air on all but the very worst days. Discontinue the fire altogether. Your feeding is too constipating, and you say nothing as to supplying grit, such as small gravel or crushed oystershells, for their gizzards. If you continue to use the house at all thoroughly disinfect it with limewash and sulphur fumes or chlorine gas. The disease is most likely something of a typhoid character, induced and aggravated by your treatment. Be very particular as to cleanliness. Discontinue the ale and the boiled milk. Give a liberal supply of sweet milk in clean vessels two or three times a day.

Fowls for Exhibition (Inquirer).—If the birds are at all dirty you had better wash them a few days before the show. This must be done thoroughly with soapsuds, soaking all the feathers thoroughly, using a sponge or brush to any soiled parts. Afterwards rinse out the soap very carefully in two or three waters, in the last of which you may put just a little "blue." Dry with a clean sponge and soft cloth, and afterwards in front of a warm fire, taking care that the feathers do not get curled. Comb them through if necessary. You had better try on one that you are not going to show first. In any case wash the feet and combs thoroughly, using a nail brush to the latter. No tonic is necessary. Why not take "POULTRY," published weekly, *Id.*, at this office?

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain	
	Baromet- er at 32° and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass		
1885.											
January.											
Sunday	4	30.172	35.0	34.7	N.	36.6	39.0	32.5	49.8	32.8	—
Monday	5	30.051	43.8	42.8	S.E.	37.0	47.6	32.9	48.8	26.8	0.024
Tuesday	6	30.241	31.3	30.7	N.W.	38.2	40.3	29.2	62.4	21.5	—
Wednesday ..	7	30.422	30.5	29.9	S.W.	37.2	39.2	27.8	46.2	20.4	0.013
Thursday	8	30.026	38.4	36.8	S.W.	36.4	41.7	29.8	45.6	24.2	0.108
Friday	9	29.803	30.9	30.8	N.	36.2	40.9	29.4	45.2	26.5	0.182
Saturday	10	29.429	45.8	45.4	S.W.	33.8	51.2	28.2	51.5	26.4	0.314
		30.021	36.5	35.9		36.9	42.8	30.0	48.6	25.5	0.641

REMARKS.

4th.—Dull, but fair.
5th.—Slightly foggy and damp all day; very much warmer.
6th.—Foggy early; fine morning.
7th.—Foggy early; fine, bright winter's day.
8th.—Fine and fairly bright; warmer; rain from 4.30 p.m.
9th.—Foggy morning; fine afternoon; rain at 5.30 p.m.; wet evening.
10th.—Very wet except part of afternoon; hail and much wind at 5.45 p.m.; starlight night.
Rainfall above the average; temperature rather below it. The most noticeable feature was the squall at 5.45 p.m. on Saturday.—G. J. SYMONS.



COMING EVENTS

22	TH	Royal Society at 4.30 P.M.
23	F	Quekett Club at 8 P.M.
24	S	Royal Botanic Society at. 3.45 P.M.
25	SUN	2ND SUNDAY AFTER EPIPHANY.
26	M	
27	TU	
28	W	Society of Arts at 8 P.M.

THE CULTURE OF AERIDES.

AERIDES must be classed amongst useful Orchids, and as the majority of the species can be obtained for a few shillings each they are thus within the reach of all who desire to grow them. Fortunately a house set apart for these plants is not essential to their successful cultivation, for they can be well grown in an ordinary plant stove. The Aerides are very serviceable because they supply useful flowers for cutting, and although they are not so showy as those of many other Orchids, they are choice, delicate, and highly fragrant. Under good cultivation the flowers are freely produced, and are suitable either for using altogether on the spike in moderately small vases with a spray or two of *Adiantum cuneatum*, or singly wired for bouquets or buttonholes. The flowers proceed from the axils of the leaves during May, June, and July, and last from two to four weeks. Some of the racemes are nearly 2 feet in length, and the perfume is so strong that they deliciously scent the air of the house in which they are grown. Even when not in flower the plants are ornamental, for they are evergreen, their slightly arched leaves and numerous roots being always interesting, especially when suspended from the roof.

These plants can be grown successfully in pots, and are then much more easily removed than when in baskets or upon blocks. For exhibition they should always be in pots, as they can be packed and transferred with less injury to their roots than could otherwise be done. Frequently, where flowers in abundance are demanded, stage room is too limited, and it is an advantage to have plants to supply flowers that can be grown in positions that will not take up valuable space. In this case it is preferable to grow the plants in baskets suspended from the roof. This is decidedly the most natural system, for the roots are freely forced through the sides of the baskets, and the plants thrive accordingly. Aerides can be grown on blocks of wood, but they require such constant attention in supplying them with water that baskets are preferable.

When these Orchids are grown in pots a moderate size will accommodate large plants, unless an attempt is made to cram the majority of their roots into them, which necessitates the use of a larger amount of potting material and much larger pots than there is any occasion for. Many plants are brought into an unhealthy condition through the use of too much soil about their roots. Even large plants with a number of stems do not require such large tubs or pots as we frequently see them in. The object of using any material in the pots is chiefly to retain moisture, and the roots that are thrown into the atmosphere are always healthier than those confined in pots. The pots as well as the crocks used for drainage must be perfectly clean, and the former at least three parts filled.

If the stem of the plant is rather long the lower part may be removed, as well as all dead and decaying roots. The stem and living roots, if too numerous or long to be arranged

above the drainage, may be placed among the crocks as filling in the drainage proceeds. A layer of living sphagnum can then be placed over the drainage, and the pots filled level to the rim with moss and lumps of charcoal varying in size according to the size of the pots employed. Crocks broken moderately small may be used instead of the charcoal, or both may be employed. The potting material should be well elevated above the rim of the pots, but the top portion must consist of sphagnum only. Peat for these plants is unnecessary, and the moss is much more readily removed when decomposed than if a mixture of peat and moss were employed.

When plants are established in pots all that is needed in repotting them is to carefully remove the moss and such lumps of charcoal that are loose; then wash away from amongst the drainage all small particles that may have become deposited amongst them. This is readily done by pouring into the pot tepid water out of the spout of a watering can, or better by immersing the pot and lower part of the plant in a tub of water and lifting it out two or three minutes after it is thoroughly filled with water. After this the drainage, pot, and plant should be allowed to dry thoroughly before the charcoal and living moss is again returned. The whole of the material should be renewed annually, or at the very longest period every second year, the former being preferable, as the moss becomes decayed and unsuitable for the roots to work in. When larger pots are required they must be carefully examined, and if the roots are found clinging to the sides the pots should be broken and the plants repotted into those of a larger size, being careful to leave the portions of pot attached to the roots.

The best time for repotting is when growth is commencing in spring, which depends upon the temperature of the house in which they are grown during the winter. When the plants are to be placed in baskets, I prefer doing so directly they are established in small pots or upon blocks, as will be described for imported plants. Frequently when established plants are purchased to start with, they are in small pots because they can be packed and removed with less injury to the roots than when in baskets. If small healthy plants are obtained they should be placed in baskets not less than 7 inches square. It is a mistake to have them in those of a smaller size so that larger will be needed the following season, for in those named they will do for several years. The baskets must be liberally drained with crocks and lumps of charcoal until at least half full. They should then have a layer of moss over the charcoal and the plant placed in, filling the remaining space as described for those in pots.

Rebaskets the plants is rather difficult, as the thick fleshy roots of some species (for instance, *A. crispum*) cling tenaciously to the wooden bars. Such kinds as *A. virens* and *A. Lobbii* are more inclined to throw their roots into the atmosphere of the house, and they can therefore be moved from one basket to another with ease and without much injury to their roots. If the baskets are thoroughly decomposed before they require new ones the work can be better accomplished, and the wood when decayed can easily be removed after the wires have been loosened. It is a good plan to have moderately soft wood baskets, so that they will decay by the time the plants require a larger size. Baskets about 12 inches square are preferable, for the plants will do well in this size for many years. If hard wood is employed, and the roots are clinging to it, the wires from the corners must be removed, and all the wood upon which roots are attached should be placed in the larger basket. The space between the two must be filled with lumps of charcoal or crocks. The roots will soon work in an outward direction through this material, and the portions of basket can be removed as they decompose.

While these plants are in active growth they require a good supply of moisture in the atmosphere; in fact this must be maintained for the well-being of the plants from the end

of February or early in March until the end of October. During the winter it is not necessary to have the atmosphere quite so dry as is required for many Orchids. During growth water should be given freely to the plants to keep the moss and rooting material thoroughly moist. The plants may be syringed once or twice daily during bright weather, but during dull or damp weather, when the water is liable to remain in the axils of the leaves for some time, they are better unsyringed. No syringing is needed during the winter months. Less water is required at their roots from October until March; but under no circumstances should the moss be allowed to become thoroughly dry. It must always be moderately moist, or the lower leaves will shrivel, turn yellow, and have to be removed, which will seriously disfigure the plants.

Aerides will not bear strong sunshine, and they must therefore be shaded during bright weather. Every ray of light possible must, however, be admitted, for this is essential to obtain sturdy compact growth. The blinds employed for shading must be of such a character that they will only break the sun's rays without excluding light. Care must be taken that they are not used too early in the day or left on longer in the afternoon than is really needed.

With a little care it is not difficult to establish imported plants of *Aerides*. Much, however, depends upon the time of year they are received; if during the summer or growing season they either start quickly into growth or die at once. During the autumn and winter months they are considerably longer before they make a start, but are certain to do so if the plants were in good condition when received. It is difficult to obtain plants exactly when you want them, but the best months in which to receive them for starting into growth afterwards are December, January, and February. All decayed roots and leaves should be removed, and the plants suspended in an intermediate temperature for at least three weeks. The moisture of the atmosphere will be ample, for if they are syringed or kept too moist at first they are very liable to decay. They may after this be removed to the stove where the established plants are grown, and if this occurs during the autumn, winter, and spring months the moisture of the atmosphere will be ample for them at first; if during the summer they may need syringing occasionally. The plants must be suspended roots upwards, so that the syringe can be freely used after they have become accustomed to the moisture of the atmosphere. When suspended as advised there is no danger of water lodging in the heart of the plant and thus causing injury. Directly new roots are visible a little sphagnum moss should be placed about the stems to assist in retaining moisture, and the syringe may be freely used two or three times daily during bright sunny weather. When root-action has well commenced the plants may be attached to small blocks of wood with a little sphagnum moss about them, and after they become established they can be placed in baskets or pots. It is not wise to place them in baskets before the following spring, for the baskets named for them would be too large at first if the plants are only of the ordinary trade size. If the imported plants are large masses baskets in proportion to their size must be used. With large plants it is a good plan after they have started rooting to secure them upon or amongst the charcoal used for drainage in the baskets in which they are to be grown. A little moss may be used for retaining moisture about them until the plants are rooting freely, when the baskets may be filled, as advised for established plants. When placed upright in baskets care must be taken in syringing that water does not lodge in the axils of the leaves. The moss and charcoal can be kept moist without syringing the plants, except on very fine days.

Aerides do well suspended in an ordinary plant stove where the temperature ranges from 60° to 65° at night from the month of October until March, with a rise by day of 5° or 10°, the former from fire heat and the latter from sun heat. During the remaining months of the year the night tempera-

ture may be kept from 65° to 75° at night, with a rise of 10° or 15° more from sun heat. If the temperature rises during bright weather after closing in the afternoon to 95°, or even 100°, no injury will be done provided there is plenty of moisture in the atmosphere. Air should be admitted every day during spring and summer when the weather is favourable. Light and air, if freely admitted, is the secret of firm sturdy growth and healthy specimens.

A small scale and thrips are the worst insect enemies of these plants. If either of these is allowed to become established it soon injures the foliage. The scale may be eradicated by frequently sponging the foliage of the plants with water in which a little softsoap has been stirred. When once this small scale has established itself upon the plants frequent sponging must be resorted to, or it is impossible to get them thoroughly free from this insect, which increases with marvellous rapidity. Thrips are best destroyed by sponging with tobacco water, a weak solution only being necessary, and if established in the centre of the plant or in the axils of the leaves, where it is impossible to reach them with the syringe, tobacco powder should be dusted over them. After this has been done two or three slight fumigations with tobacco smoke may be given on successive evenings for the purpose of destroying any insects that may have escaped into the house.

I shall not give a list of species, for the majority are worthy of cultivation, and can now be obtained at moderate prices, except a few new and rare ones, which can be dispensed with where cheap and useful Orchids are required.—
WM. BARDNEY.

LATE VINE BORDERS.

OWING to the Grapes not being cut until the turn of the year, and the months of January and February being unfavourable to the lifting and relaying of Vine roots in outside borders, the occupants of late houses do not always receive the attention needed, as is the case when the Vines are not producing satisfactory results; yet the work of renovation is postponed, for sooner or later the borders must be put right, and the proper time to do this is so soon as it is seen that things are going wrong. No time should be lost after the Grapes are cut in making a careful examination of the borders, and if necessary immediately prepare to remove the old and put in the new soil. There is nothing like having everything ready for use when it is wanted, as it expedites matters proportionately.

The first consideration is soil, and the staple should be turfy loam, the top 3 inches of a pasture where the soil is of a sandy rather than clayey nature, and preferably calcareous. This should be chopped up roughly, and have added to it a tenth of lime rubbish from an old building, a similar proportion of burned earth, a twentieth of charcoal, and a fortieth of crushed bones; the whole well incorporated and placed either in an open shed or near the border to be operated on, and covered with tarpaulin to protect it from rain. Then, to facilitate matters, a liberal quantity of fresh clean drainage materials, such as broken stones or brickbats, may be prepared and placed near the borders, as much time is expended in cleaning the old drainage materials, which retards the work.

Advantage must be taken of the first settled mild weather for freeing the roots of the old compost and clearing everything away, even the drainage down to the concrete, if the latter has been employed as the base of the border. Preserve all the roots, being careful to injure them as little as possible, and to prevent them becoming dry tie them up in damp mats and secure along the front of the house. The drains must first be set right, not only as regards those of the border, but the outlet from it. Then place a foot to a foot and a half depth of drainage on the concrete or bottom; roughest at bottom, the finest being spread on the surface. Place next turf, grass side downwards, over the drainage, and then wheel in the compost, putting in layers and beating down with forks, and raising in this way to within 9 inches of the intended surface. The width of the border made need not exceed 9 feet, and in some instances 6 feet will be sufficient, hence the front or outside should be erected of sods, which will form a retaining wall.

Relaying the roots must be proceeded with by taking those which have found their way deepest from the side border, shortening all the thickest and longest and covering them with a thin layer of compost, then more roots, and continue this with thin

layer of soil so as to keep all the roots separated from each other until all are disposed of; the top not being more than 6 inches beneath the surface or nearer than 3 inches; the border necessarily being raised some inches above the ultimate level to allow for settling. Cover with a layer of dry protective material for keeping out frost, and over all with shutters or tarpaulin for throwing off snow or rain.

If the inside borders are properly constructed Vines will not be greatly checked, as the roots in these borders receiving liberal supplies of tepid liquid manure will keep the growth in satisfactory progress in the early stages, and as the season advances the Vines will gather strength from the stimulus given by new roots in the fresh compost of the outside border, and they are almost certain to finish satisfactory as regards the crop. Usually, Vines that have long loose bunches, long-jointed wood, make late growth and do not finish their crops well, being deficient in colour and long keeping properties, are so improved by lifting the roots as to form compact bunches, which set well and colour perfectly.

Where the Vines have inside and outside borders there is no fear of operating so as to sacrifice a crop of Grapes, as it may be done without injury to the Vines, for one can be taken out one season and the other the next, so that a thorough renovation of the borders can be effected without loss of crop.—G. ABBEY.

BORDER ANNUALS.

Now that the time for making out seed lists has arrived a few notes respecting some of the more useful and showy of our hardy and half-hardy annuals may be deemed opportune. On a good selection more than upon treatment depends in a great measure half the pleasures and joys to be obtained from the cultivation of these plants. Taking them in alphabetical order, the first in our list stand those pretty Everlasting Flowers *Acrocliniums*, the best being *A. roseum* fl.-pl. and *A. album* fl.-pl. Seed may be sown in March or April in pots or pans and have the assistance of a little heat to insure greater certainty of its germinating, and, as with all other half-hardy annuals, they should be pricked out in boxes or frames when large enough to handle, and be duly hardened off previous to planting out in the open border. Asters.—Of these there are so many strains that it would be invidious to particularise; no collection, however, would be complete without a few of the dwarf compact varieties, such as Boltze's Dwarf Bouquet and Dwarf German. Both are very free-flowering, averaging 6 inches in height, and when in bloom with from six to twelve flowers on a plant they are well adapted for lifting and putting into small pots for decorative purposes. *Bartonia aurea*, *Calendula pluvialis*, *Calliopsis atrosanguinea*, *C. marmorata nana*, and *C. tinctoria* are hardy annuals well deserving cultivation, and may be sown in April where they are intended to flower.

There are now many varieties of *Chrysanthemum tricolor* which are exceedingly popular as market flowers with those who grow plants for such a purpose, and the demand for them appears to be greatly on the increase. Amongst the best will be found *atrococcineum*, *Burridgeanum*, *Lord Beaconsfield*, *venustum*, *W. E. Gladstone*, and *luteum*. These will be found to vary in colour from scarlet to crimson, yellow, and white, the individuals under good cultivation being from 2 to 3 inches in diameter and of excellent form and good substance. Seed may be sown in April where the plants are intended to flower, which will be from June to September; but for flowering earlier seed must be sown in the previous autumn or in heat in January, and be hardened off in the usual way. Candytuft, both crimson and white, is always worth growing, and the same may be said of *Clarkia elegans flore-pleno*, *C. integripetala*, *C. pulchella*, *Collinsia bicolor*, *C. candidissima*, and *Collomia coccinea*.

Single Dahlias, although not annuals, may be treated as such, and if a good strain is obtained will well repay all care and attention bestowed upon them. Sow seed in pots or pans in February in heat, prick the plants out when large enough into boxes, afterwards pot them into 4-inch pots, using a good compost; stake and tie when necessary, and plant out in the borders the first week in June, presuming they have been hardened off in a cold frame previously. *Eschscholtzia californica*, one of our oldest hardy annuals, still holds its own with many of the new comers, and the time is doubtless far distant when it will be lost to cultivation. *Gaillardias* within the last two or three years have gained much popularity, and in my opinion rightly so, as they are exceedingly pretty, very floriferous, and useful for cutting. *G. hybrida grandiflora* and *G. picta Lorenziana* are the best. The last-named produces flowers of various colours, and will resist in the autumn months a few degrees of frost, a fact which greatly enhances its value. It is also eminently suited for pot culture for greenhouse and conservatory decoration, and well-grown plants when in bloom are sure to elicit admiration from those who see it for the first time. Seed should be sown in heat in February, and be treated in all respects

similar to the other half-hardy annuals mentioned previously. *Godetia Lady Albemarle*, *Princess of Wales*, *rosea alba*, and *The Bride* are all very showy and useful hardy annuals. *Linum grandiflorum coccineum* when once grown is almost sure to become a favourite ever afterwards. *Lobelias* seem to have lost ground in many places during the last few years, but for what reason it is difficult to say, unless it is that *Violas* have outdistanced them as more continuous-flowering; however, where it is thought desirable to grow them the following varieties will be found a good selection:—*L. Cobalt Blue*, *Erinus erecta alba* and *rosea*, *Paxtoniana*, and *pumila grandiflora*. *Lupins* merit and still receive attention where good collections are grown. The large blue, white, rose, and yellow varieties should receive attention, as well as *Lupinus affinis*, *hybridus atrococcineus*, and the dwarf varieties *nanus* and *nanus albus*, seed of which should be in the open border early in April. Such annuals as *African* and *French Marigolds*, *Mignonette* and *Tropæolums*, are too well known to call for special notice. *Nemophila insignis*, *discoidalis*, and *maculata* are worth cultivating where variety is in request. Sweet Peas as a back row to a mixed border cannot be equalled by anything else for the same purpose. Mixed colours are much to be preferred for general effect. The seed ought to be coated with red lead or soaked—that is, moistened with petroleum previous to being sown wherever small birds are at all troublesome.

Phlox Drummondii grandiflora is an excellent plant for beds and borders, producing as it does an almost endless variety of colours in its circular flowers. *Portulaca splendens*, both double and single varieties, can be highly recommended for growing on rockwork or in any dry sunny situation. As dwarf-growing free-flowering plants we know of nothing amongst half-hardy annuals to surpass them when they are successfully grown. It must be freely admitted that failure is more often the result than otherwise, owing in a great measure, we think, to their requirements not being fully understood, and to their being planted out in damp and sometimes shaded situations. *Sapnaria calabrica* is quite a gem amongst these plants, and not at all fastidious as to soil, climate, or situation, and if sown in the open border in April will yield a profusion of its beautiful bright pink flowers from July till cut down by frost. Ten-week Stocks need not be particularised, except it is to note the fact that they are not always so well grown as they deserve to be. Our advice regarding them is, Obtain a good strain, afford generous treatment, and no cause for regret will ensue thereby, notwithstanding any little extra trouble and expense incurred. *Zinnia elegans* is the last in our list, though not least, and we would merely say that the same remarks as to culture as have been given in regard to Stocks apply with an equal force to *Zinnias*.—H. J. H.

CLEANING PLANT AND FRUIT HOUSES.

WITH the new year has come an opportunity for a fresh start in most matters connected with horticulture, as well as in others so ably indicated by "Wiltshire Rector" and Mr. Bardney. In the case of plant and fruit houses this should mean first a thorough cleansing of all inside surfaces. All glass and woodwork should be thoroughly washed with water as hot as is possible to use it, in which softsoap—4 ozs. to the gallon—has been dissolved. Here let me notice the great advantages which the new systems of glazing, such as Rendle's, afford us, such a small quantity of woodwork being used that a good syringing with hot water mixed as above, and another afterwards with clean hot water, will generally be found sufficient in the case of cool plant houses and fruit houses. Occasionally it will be found necessary to give a few touches with the scrubbing brush between the two syringings, thus effecting a great saving of time and labour over the old system of glazing, where all had generally to be scrubbed with a brush. If any repairs are wanted, or any inside painting in fruit houses, it should be at once attended to, as such work is often inaccessible in fruit houses during the growing season.

All wall surfaces must be cleaned where necessary, and then well washed with hot lime; if there is reason to suspect that any insects or their eggs remain in the wall add quarter of a pint of carbolic acid to each gallon of limewash. This will make it a light brown colour, but not by any means unsightly. If the houses are used for plants these should be well looked over and cleaned before being replaced in their respective positions.

In houses where fruit trees or Vines are growing the necessary pruning should now be done, and the trees or Vines thoroughly cleansed to get rid of any eggs or larvæ of insects which may have taken up their abode there for the winter. For Peach trees, &c., a good syringing with hot water, containing softsoap or Gishurst compound—4 ozs. to the gallon—will often be all that is required. If the buds are swelling this operation should not be attempted. Should the trees have been badly infested with scale or red spider it may be necessary to brush them over carefully with a similar solution, working the brush outwards from the main stem so as not to injure any buds. If there has been no mealy bug in the house do not strip off any bark from Vines, but scrub well with a good brush, using the same mixture and working the brush well round the spurs. Do not follow the old practice of smearing a mixture of clay, soot, lime, sulphur, and cowdung over the stems. The trees or Vines may

now be secured to the trellis again, allowing room for all young wood to swell double its present size.

It is a custom for amateurs and some others to make their houses receptacles for flower pots, sticks, labels, and cans. If any of these remain clear all out at once; they rob the plants, &c., of the air which is necessary for their subsistence, also encourage all kinds of vermin, besides appearing very untidy.

Any spots of limewash should now be removed from doors, shelves, or pipes; all loose soil being taken off the surface. Manure may be added to the borders if judged to be necessary, some fresh soil placed on them, the trellis or other paths washed clean, and all will then be ready for another year's work with far better chances of success than starting with unsweetened houses, which encourage all kinds of insect and other pests, and never give first-rate produce, cleanliness being quite as essential to plant life as it is for animals.—W. H. DIVERS, *Ketton Hall*.

CHOICE LITTLE FERNS.

WHEN once a taste is acquired for the smaller members of the Fern family, an indescribable interest centres in them. There is the interest arising from the comparison between them and other species. Take as an example the great difference between *Davallia parvula* and *Cyathea princeps*, which are united by a series of gradations, alike remarkable in beauty and structure. The study of plant life in all its phases yields much pleasure, but, in my opinion, that of Ferns is particularly so. There is much more in the life history of a Fern than appears upon the surface. Doubtless much is yet to be learnt concerning it; freaks occur now and again which reveal the imperfection of our present knowledge. I am not quite certain whether all the details are mastered in connection with the viviparous character of many species, and the varying aspects this peculiarity assumes in different species. One thing is remarkable in a general way—viz., the perpetual effect of original impregnation in the prothallus state, resulting in the development of a bud, which under favourable conditions ultimately grows into an individual capable of producing millions of spores, the majority, at least, having the power to increase the species. But it is not my intention to enter this field; so now to the text. Perhaps the chief interest in connection with these Ferns is their culture. Many are the methods adopted to make some of them happy. One or two of those described below have caused many heart-burnings and disappointments, and yet when once the right knack has been discovered the vexations are forgotten, and the success seems all the more enjoyable. I have seen some of these under very varying conditions as regards temperature doing splendidly. *Rhipidopteris peltata*, for example, I have grown in a greenhouse, and have known others to succeed with it in the Orchid house, the specimens in the latter temperature being largest, but the plant under cool treatment was perfectly healthy and very active. The value of any plant is doubtless increased if it can be accommodated in a medium or low temperature. A host of enthusiasts then take it in hand, who for want of means would have to do without it. On that account it is worth while to sacrifice something to find out the limits as regards temperature which such little beauties as the Ferns I have selected for this paper can be grown in. It is useless to attempt cultural instructions in a general way for them, so I will give a few hints with each brief description, as their requirements are variable. Of course the few described below are only a tithe of those which can lay equal claim to merit, and upon another occasion some others may be made the subject for another paper.

ACTINIOPTERIS RADIATA.—So much was the original describer of this Fern struck with the rayed character of the fronds, that both the generic and specific names are based upon it; the former literally means the "rayed Fern," and the latter has a similar meaning. It has also been aptly compared to a miniature *Chamaerops*, a quaint, unique little plant. The fronds are in dense tufts, from 2 to 6 inches high; the lamina fan-shaped, an inch or more across each way, divided to the stem into narrow segments which are again deeply forked, those of the fertile fronds longer than the barren ones, but all narrow and pointed, of a pale green in colour, and of a rigid texture. It is scattered over a large area, is abundant in many parts of India, Ceylon, Arabia, &c.; an elongated variety named *australis* is also recognised. The most successful way to grow the "rayed Fern" is in a shallow pan most efficiently drained, and filled some 3 inches above the rim with a mixture of sweet fibrous peat, sand, and charcoal, to which some nodules of sandstone may be added. Arrange some of the latter about the tufts, water carefully, do not wet the fronds, keep it in a stove temperature, and cover the plants with a bellglass, placing the pan in a shady position near the glass. Disturb it as little as possible.

ASPLENIUM FONTANUM (the Rock Spleenwort).—Though once

a recorded native of several places in Britain, it is now, I fear unknown in a wild state. The fronds are tufted, growing under varying conditions from 3 to 8 or even 9 inches long, about an inch or so broad, oblong-lanceolate in form, twice divided, the pinnules again being deeply cut, in some instances nearly down to the midribs, of a deep green colour, with a soft texture. The segments are so closely set, and often imbricated, as to give the fronds a curled appearance. Under natural conditions it occurs over a wide area, including nearly all parts of Europe, the Himalayas, &c. It is perfectly hardy in many parts of the country. I have never seen finer fronds produced than upon a plant in the hardy fernery belonging to E. G. Loder, Esq., Floore House, Weedon, near Northampton. It was planted on an elevated ledge of the rockery in gritty soil, and was evidently quite at home. In less favoured localities it may be grown in the coolest house or pit, or it forms a charming specimen in the Wardian case in a dwelling-room. It requires good drainage, a gritty soil of loam and peat.

DAVALLIA PARVULA.—This is charmingly pretty; the slender scaly rhizomes run rapidly when the plant is happy, and they are covered with the tiny fronds which grow from 1 to 3 inches high, the latter height only acquired in a high moist atmosphere. They are triangular ovate in outline, twice or three times divided, the last divisions forked or deeply cut, of a rich green colour with a firm texture. Native of Borneo and Singapore. I have seen this most successfully grown in small pans of soil well raised and fibrous, and remember some very fine examples of it at Mr. Williams' nursery at Holloway several years ago. Quite recently I saw it most happily accommodated at Messrs. Birkenhead's nursery at Sale, near Manchester, upon small blocks of cork. Some fibrous soil and fresh moss is secured with the plant to the cork with copper wire, and suspended in one of the stove ferneries there; the whole is kept damp, the moss is healthy and green, and the *Davallia* forms charming little clumps; indeed it is much more satisfactory grown thus than by any other method.

DAVALLIA ALPINA.—This is often called *Humata alpina*, but is a larger plant than the last, yet small and quite distinct. The fronds spring from small wide-creeping rhizomes, are from 1½ to 3 inches high sometimes, but rarely more, triangular in outline, the barren frond not so much divided as the fertile one, which is sharply toothed at the lower portion; the colour is dull green, with a tough firm texture. It is found in Java, Borneo, and contiguous islands. It does well treated like *D. parvula*, but it is more vigorous, and forms a broad mass in much less time than that species. In ferneries where a good rockery exists it may with advantage be planted on a shallow ledge in a light elevated position, where it may be expected to establish itself, and ultimately clothe the ledge with its pretty frondage. The soil necessary is a free gritty mixture, mainly of peat and sand.

GYMNOGRAMMA HISPIDA.—A distinct and pretty little species from New Mexico and the valley of the Rio Grande, producing triangular fronds upon stipes from 3 to 6 inches high, three times divided, the ultimate divisions strap-shaped and obtuse; the colour is pale green, the surface very hairy and scaly, the stalks are also hairy. I saw it in plenty at Messrs. Birkenhead's recently in a very cool house, with multitudes of *Cheilanthes*, *Pellæas*, &c., with which it delights to dwell. These were grown in pots. The best position for it is on a small rockery in a cool house or pit, with thorough drainage, and a gritty soil with which some nodules of sandstone may be added. Failing this, grow it in a well-drained pan, always keep the foliage dry, or decay will be the result.

GYMNOGRAMMA TRIANGULARIS.—An elegant little Fern, abundant on rocky hillsides throughout California, where it is known as the "Californian Gold Fern," and other parts of North America, and is quite distinct from the last. The fronds grow from 4 to 12 inches high upon slender polished stipes; the lamina is triangular or pentagonal in outline, from 2 to 4 inches each way, sometimes more under liberal cultivation, twice divided, the final lobe blunt, oblong, with slightly crenated margins; the upper surface is deep green and smooth, the under is coated with yellow farina; sometimes the powder is nearly white, but all I have seen under cultivation possessed the yellow colour. This may be successfully treated like the last. It is best planted out on a small rockery, placing the crowns securely between two pieces of sandstone. The finest specimens I have seen were in Mr. Loder's garden, planted in a most interesting wall-fernery in a cool house. As far as I remember it was planted in a small pocket, where it was thriving splendidly, producing fine fronds.

NEPHRODIUM FRAGRANS.—This Fern is often called *Lastrea fragrans*, and almost invariably sent from North America as

Aspidium fragrans. It is widely distributed in North America, also occurring in the Caucasus, &c. The fronds are produced in dense little tufts from 3 to 6 inches long, and not much more than an inch broad, sometimes less, oblong-lanceolate in outline, twice divided, but the secondary divisions, as far as I have seen, even extend to the midrib, of a rich green colour, with a soft herbaceous texture, and a sweet fragrance almost like that of Violets. This little gem does well on the rockery outside if a warm sheltered position is selected. I have seen it in a few places, and have dried fronds from one rockery 5 inches long. It should be firmly pressed between two small stones, and the soil very sandy, with a little peat and leaf mould; if covered with a small bellglass it will be much assisted. It is an excellent little Fern for a Wardian case, or for growing in a small pan in a cold pit or house.

RHIPIDOPTERIS PELTATA (*Acrostichum peltatum*).—This produces slender rambling rhizomes upon which the little fronds are closely set, growing from 2 to 6 inches high, the lamina of the barren fronds being fan-shaped, or sometimes nearly circular in outline, with several narrow forked divisions proceeding from the top of the stalk; the fertile fronds are smaller and nearly round, the colour is deep green. It is found in the West Indian Islands, Peru, Brazil, &c. This is usually grown in stove temperatures, but it may also be grown in a greenhouse. I have had a good specimen thus treated. It was grown in a shallow well-drained pan, in a mixture of fibrous peat and sand, with a little green sphagnum chopped up and mixed with it. After the rhizomes were pegged down the surface was covered with fresh sphagnum, in which the rhizomes ran freely. A bellglass was always kept over it, and a good supply of water given; indeed it must never be anything like dry or it suffers very much. The soil is best well raised above the rim of the pan. I have never seen it tried on blocks of cork, but I see no reason why it should not succeed well enough. It is truly a charming and curious little species, like the *Actiniopteris* resembling a miniature Palm. Upon another occasion I hope to mention some of the *Pellæas*, *Nothochlænas*, and *Cheilanthes*.—T.

GRAPE GROS GUILLAUME.

WITH the exception of Duke of Buccleuch perhaps no Grape in cultivation has been more subjected to adverse criticism than Gros Guillaume; yet with all there is not a late Grape more easily managed that gives heavier and better returns than it does when fairly treated. After planting most growers succeed well enough with it for the first two or three years, then the bunches by degrees appear long and thin, with immoderately long footstalks to the berries, clearly demonstrating that something is wrong, and if this something were followed up it would prove to be in most cases insufficiently ripened wood. The shy-bearing character is usually induced in the same way, and it is not to be wondered at when we so often read in books upon Vine culture and also in the horticultural press men of light and leading advising Vines to be placed 2½ feet to 3 feet apart, and the spurs some 15 to 18 inches. Indeed, one author goes so far as to maintain that the best returns are had from Vines planted 2 feet apart and 12 inches between the spurs. The mischief of this teaching is, that although Black Hamburgh and Muscat of Alexandria will produce Grapes of a kind under such a system of treatment, the case is totally different when dealing with gross-growing varieties such as Gros Guillaume, which must have ample room for the laterals to develop their large fleshy foliage without crowding.

Gros Guillaume does not require a high temperature to bring its fine handsome bunches to perfection. We grow it in a span-roofed house in company with Lady Downe's Seedling, Gros Colman, Alwick Seedling, and Gros Maroc. The Vines are planted 4 feet 3 inches apart, the rods are 17 feet long, and from these we take only seven spurs on each side, and the laterals from them are allowed to run out about 9 feet. This to many may seem an extravagant waste of space—in practice such is not the case, for instead of Gros Guillaume being a shy bearer under such treatment, almost every lateral shows a bunch, many two, and some even three. When ripe they usually weigh from 6 to 10 lbs. each, close and compact, with a footstalk not longer than from 2 to 3 inches. The weight of Grapes we get is from 70 to 90 lbs. per rod. Gros Guillaume is not a coarse Grape, and in proof of this I send a small sample for an expression of your opinion.—J. MCINDOE.

[This "small" sample is what many persons would call large; the berries are large, regular, with short footstalks, well finished, and of good quality.]

MALVA UMBELLATA.

THE attractive and little known plant represented in the woodcut (fig. 10) is one of the numerous interesting rarities included in the

Cambridge Botanic Garden, and to the Curator of that establishment, Mr. R. Irwin Lynch, we are indebted for the specimen figured. It is a Mexican plant, and was amongst those described and illustrated by Cavanilles; it has therefore no claim to novelty, though, like many other old and neglected plants, it is well worth general culture.

This *Malva* appears to have been known in Spain previous to its introduction to England, for it is recorded as growing in the Madrid Botanic Garden many years before, but it was not brought into this country until 1826, so at least says Mr. Don. The flowers have been described as "scarlet," but this term cannot be correctly applied to those we have seen, which are of a bright red hue, the central column of stamens being white. The plant is strong-growing, with large irregularly lobed leaves, and it succeeds very well in a warm conservatory or intermediate house, where it will grow strongly and flower freely during the autumn or early winter.

UNDER GARDENERS.

I HAVE read with much interest the two numbers of the Journal which have contained so many useful suggestions and such good advice on subjects which are of vital importance to all gardeners. As I am yet



Fig. 10.—*Malva umbellata*.

an under gardener my remarks will be more properly confined to the subject which was so ably started by Mr. Bardney and taken up in such an encouraging manner by "Lathyrus." Both of your correspondents have written in a spirit that I am sure all under gardeners will appreciate, for when we are continually hearing of the alleged inferiority of the present race of gardeners compared with their predecessors, it is more calculated to check the ardour of the more sensitive than to do good to anyone.

I believe that among the rising generation of gardeners can be found men who are as earnestly attached to their profession, and who pursue it with as much unceasing perseverance, as any of their predecessors. It has been my good fortune since I began bothy life to live with more than one such man, and they have served (I hope not in vain) as models for my own imitation. All are not gifted with the peculiar skill and unbounded resources that are necessary to make a first-class gardener, but I am afraid there are many who do not arouse themselves enough to bring out what talent they possess, while others are wanting in those perceptive faculties that are required to enable them to put their knowledge to a practical use. Many a gardener has surpassed in the battle of life others who were his superiors in knowledge simply because he had keener per-

ceptive powers, which enabled him to use his talents at the right time and in the right way. There are times when we have to strain every nerve and bring all their perseverance into action to tide over difficulties which arise, and it is then that the man is fairly put to the test. I can honestly say from my own experience—and I think many others will agree with me—that by using the formidable weapons of energy and watchfulness difficulties that perhaps seemed almost insurmountable will gradually disappear, and success in a greater or less degree will come at last.

Gardening has to be conducted in such widely different ways to suit the convenience and requirements of different establishments that we are continually seeing and learning ways that are new, which cannot fail to be of great advantage in after life; but it takes young men some time to get into the ways of their superiors in the various gardens in which they serve. I hope it will not be considered presumptuous on my part to give an opinion, as I do so in all earnestness, but I think that in many cases head gardeners would do well when they keep men who are responsible for the various departments, and who strive to do the best in their power, if they allowed them a little more scope in the management of their work. Of course it is the duty of foremen to carry out the wishes of their superiors, but there are many ways of attaining the same end, especially in the little details of gardening, and it often hampers a man to have his plans upset when he has carefully prepared them so as to work in the various pressing matters he may have in hand in a methodical manner, which every practical man knows is so essential to have them executed with dispatch.

In conclusion, let me urge all under gardeners not to allow the suspicion of a doubt to exist concerning the competence of the rising generation of a noble calling; and though our path may be beset with difficulties and competition, in some cases perhaps even greater than those that the preceding generation had to encounter, yet by facing difficulties with manly determination we must eventually attain success. And let us in our respective positions consider the responsibility that rests upon us of using every means in our power to make the gardens in which we serve a credit to the craft and a source of satisfaction and delight to those for whose gratification they are maintained.—AN UNDER GARDENER.

HAVING been a reader of your Journal for ten years I look for it as one of my pleasures to see the news of the week, and to study it. Looking through the number for January 8th, page 34, the article on under gardeners interested me, and I was pleased to see that "Lathyrus" had a good idea how to treat young men. He asks some of us to give our ideas on the subject, and that has induced me to write the following observations. Every young man has a different disposition, and it is the interest of every head gardener to study them. Some young men, if treated with kindness and trusted, will show their abilities and use them to the profit of the gardener. Then there are others if treated with kindness and firmly, not harshly, controlled do very well. Others, again, with all the kindness that can be given them will never become gardeners, but seem to be in the wrong calling. Of course it is no use a man intending to be a gardener without he takes an interest in his work, but I have seen that interest driven out of them by harshness on the part of the head gardener. One garden I was in where we were treated in a kind way, and each of us had our own share of the work to do, and were responsible for that. I learnt more in that garden than in any other. In another place it seemed to be the greatest pleasure to get away from the work as soon as we could. Treat a man with kindness and he will answer to it in some form; treat him in a grumbling dissatisfied spirit, and he will soon lose all interest in his work.—A SURREY UNDER-GARDENER.

CHRYSANTHEMUM NOTES.

THE NATIONAL CHRYSANTHEMUM SOCIETY.—The annual general meeting of this Society was held on Monday, the 19th of January, at the "Old Four Swans," Bishopsgate, the President, E. Sanderson, Esq., being in the chair. The report having been read, Mr. Sanderson proposed and Mr. N. Davis seconded, that it be received and adopted. The balance-sheet was then submitted to the meeting and approved of. The next and one of the principal objects of the meeting was the election of officers, which was then proceeded with as follows:—President, E. Sanderson, Esq.; Vice-President, R. Ballantine, Esq.; Treasurer, J. Starling, Esq.; Hon. Secretary, Mr. Wm. Holmes; Hon. Collector, Mr. J. Broughton; Auditors, Mr. Drain, jun., and Mr. Crane.

Mr. Ballantine then proposed, and Mr. Kendall seconded, that the General Committee should consist of thirty-six members, exclusive of those members who might be delegated as representatives of the affiliated Societies. It was also resolved that the election of the Floral and Exhibition Committees, together with the election of the Judges, be referred to the next meeting of the General Committee; after which followed the election of new members.

Another important item on the agenda paper was the adoption of the schedule of prizes for 1885, in which various alterations and additions were made, some of the prizes increased, and new classes instituted; as an instance of which may be mentioned that the class for twelve blooms, comprising four incurved, four Japanese, and four large Anemones was cut out, a new class for six Japanese Anemone blooms inserted, &c., &c., all of which will duly appear in the new schedule when printed in a month or six weeks' time.

During the course of the evening several suggestions were considered as to inaugurating classes for single Chrysanthemums and berry-bearing plants, and other ideas for increasing the popularity and credit of the Society.

Letters were also read from Messrs. Sutton & Sons, Colonel Mallock, and W. H. Cullingford, Esq., with donations for prizes in special classes. It was also resolved that a prize of two guineas be offered for the best method of staging Chrysanthemum blooms for exhibition without cups, not less than twelve distinct Japanese varieties, but the Society to have the right of withholding the prize unless a practical method be adopted. Also a similar prize for twelve incurved blooms. In both cases, we believe, the ordinary show boards are not to be used.

Messrs. Cannell & Sons very kindly sent up several pots of a fine white Cyclamen to decorate the room with, for which a special vote of thanks was passed. The meeting, which was well attended, broke up a few minutes after 9 P.M., after the thanks of the meeting had been passed to the President, Vice-President, and Secretary.

CHRYSANTHEMUM DOLORES.—We have only one small plant under this name, which has flowered profusely and has been in full bloom since the third week in November, and now, January 19th, has several flowers in good condition. It has hardly been mentioned by any of your correspondents, yet I think it is a most valuable variety for late work. I enclose a bloom for your inspection. It appears true to description given of it in catalogues. Is it known by another name?—BRADWEN.

[The blooms sent are very good for such a late period in the season; the florets flat-pointed, of a delicate rosy colour, and closely placed, forming compact heads.]

LATE CHRYSANTHEMUMS.—I have plants of Ceres and Boule d'Or still in bloom. One of the flowers on the former is just 7 inches in diameter. They had the same treatment as others that bloomed two months ago.—C. P.

SYNONYMOUS CHRYSANTHEMUMS.—Mr. N. Davis of Camberwell gives the following remarks in his catalogue for this year upon synonymous Chrysanthemums:—"I emphatically protest against the right of anyone to change the name of a flower after it is once distributed in commerce, whether of English or foreign origin. There are many varieties that get their synonyms by accident; others again may not be exactly synonymous, but at the same time bear such similarity that it is not proper to send them out as distinct varieties. If a flower sports in two or three places at the same time they are evidently from the same source, even if indirectly, and the first in the field should be the recognised name, unless there is distinctness enough to perpetuate more than the one. Some varieties, such as the Rundle and Queen families, are continually sporting, and too much care cannot be taken by distributors in sending them out. I subjoin give a few synonyms of varieties for the guidance of intending purchasers. In one or two instances the varieties, it is thought, were originally distinct, but as in commerce now they are synonymous; for instance, Golden Queen of England, Emily Dale: John Salter, Mr. Howe: Empress of India, Snowball.

PROPER NAMES.	SYNONYMS.	PROPER NAMES.	SYNONYMS.
Albert de Nurios.....	Albert	Mlle. Augustine Gantheut	Augustine
Angelina.....	Pres. Sanderson	Mad. Bertier Rendatier ..	Curiosity
Boule d'Argent	Silver Ball	Mad. Casteux Desgrange	Maize
Christine (White)	Mrs. Forsyth	M. Devielle.....	E. C. Jukes
Comte de Morny.....	Purple Pompon	Mad. Madeline Tezier ..	Uncertain
Delphine Caboche	Miquillon	Jeanne d'Arc	Alderley
Elaine	Mrs. Marsham.	Mrs. Huffington	Incognito
Elise	Eliza	Mrs. Sharpe	Miss Thurza
Empress of India	Snowball	Miss Marcheux	Pink Perfection
"	Mrs. Cunningham-	Miss Mary Morgan.....	Defiance
"	ham	Marguerite de Col	Sistou
"	White Queen of	Nanum	Lord Alcester
"	England.	Princess Imperial.....	Christmas No.
"	Lady St. Clair	" of Teck	Beauty of St.
Emperor of China	Webb's Queen	" of Wales	John's Wood
Flamme de Punch	Punch.	President	Mr. Murray
Golden Empress of India..	Bruce Findlay	Queen of England	Blush Queen of
Golden George Glenny ..	Mrs. Dixon	"	England
Golden Mdle. Marthe	Mrs. Glover	"	Striped Queen
Golden Queen of England	Miss Oubridge	"	of England
J. Delaux	Emily Dale	St. Mary	Souvenir d'un
John Salter	F. A. Davis	"	Ami.
La Frissure	Mr. Howe	Source Japonaise	Mr. R. Ballan-
L'Africaine	Early Rose	"	tine
L'Chinois	Queen	Soleil Levant	L'Infante d'Es-
L'Or du Rhin.....	George Gordon	"	pange
L'Beuvennue	Chinaman	Striatum.....	Album striatum
Little Bob	Golden Rhine	St. Crouts	Saddington
"	J. Hillier	"	Pollion
"	Scarlet Gem	Tricolor	Mr. J. Starling
"	Dr. Duval		
Mable Ward	Bendigo		

LATE-FLOWERING CHRYSANTHEMUMS.—Let me recommend the Duchess of Albany (Jackson) as a late and most useful Chrysanthemum. I had two plants in 12-inch pots which made strong growths, but the crown buds of which were blind. The terminal buds, which were late, were all left on the plants and did not commence to open until the end of November. From that time until the present (January 16th) I have not been without blooms, which are of a pleasing orange-buff colour, the petals being slightly twisted at the points. The flowers never come "open-eyed," which is greatly in their favour. They are, of course, not up to exhibition standard, being only 4 or 5 inches across, but they are of a hue much wanted as a contrast at this season of the year, added to which they are good keepers. Mdle. Moulise was equally shy in throwing the crown bud, and gave several good flowers at Christmas from terminal buds, but it certainly is second to the Duchess, in that it is very apt to show the eye rather too conspicuously. I might also add that some terminal buds and side shoots of that grand variety, F. A. Davis, gave fair blooms almost up to Christmas. But in the three cases above

enumerated it is right to add that the plants were kept out of doors as long as possible, being stood inside the greenhouse if a frost seemed probable, and turned out again when there was no fear of danger from this cause.—H. A. ROLT, *Wimbledon Horticultural Society*.

LIST OF VEGETABLES.

IN reply to "B. J. B.," I will give a list of vegetables similar to the one I used for this year's supply, as I have already had mine in for the year.

Beans.—Broad, Seville, Broad Windsor, and Johnson's Wonderful; Dwarf—Osborn's Forcing, Sion House, Negro, and Canadian Wonder, Runners—Champion Scarlet, and Mont d'Or Butter Bean.

Broccoli.—Walcheren, Veitch's Self-protecting Autumn, Snow's White, Osborn's White, Cooling's Matchless, Backhouse's White, Sutton's Late Queen, and Purple Sprouting.

Bect.—Pragnell's Exhibition, Egyptian, Nutting's Dwarf, and Henderson's Pine Apple.

Brussels Sprouts.—The Aigburth.

Kale.—Dwarf Curled Scotch, Buda, and Labrador; this for the first time.

Cabbage.—Wyatt's Offenham, Ellam's Dwarf, Improved Nonpareil, Red, and Couve Tronchuda.

Savoys.—Green Curled and Drumhead.

Cauliflower.—Sutton's King, Early London, and Autumn Giant.

Carrot.—French Horn, for forcing; Long Surrey.

Cucumber.—Telegraph.

Celery.—If the character given is genuine of Henderson's White Plume no other variety will equal it; Sutton's White Gem, and Major Clarke's Red.

Endive.—Picpus and Improved Round-leaved Batavian.

Leek.—Musselburgh.

Lettuce.—Cabbage, Paris Market Cos, Paris White, and Moor Park.

Melon.—Blenheim Orange and High Cross Hybrid.

Onion.—Improved Reading, Deptford, and The Queen.

Parsnip.—The Student.

Peas.—Sutton's Ringleader, Advancer, Dr. Maclean, Walker's Perpetual Bearer, Ne Plus Ultra, and Veitch's Perfection.

Spinach.—New Longstanding.

Radish.—Wood's Frame and Mixed.

Turnip.—Munich, Early Snowball, and Veitch's Red Globe.

Tomato.—Hathaway's Excelsior.

Vegetable Marrow.—Moore's Cream.

These are all my standard varieties. I always add some new varieties of each vegetable as trials, but it is very rare that they surpass the old tried sorts. It will be seen that the varieties I have named are mostly old and cheap, the latter being a consideration in most gardens.—J. L. B.

CULTIVATION OF MIMULUS IN POTS.

FOR conservatory decoration during the early spring months there are few plants that equal the *Mimulus tigrinus*, either as regards the gorgeous colouring and abundant production of its flowers, or the ease with which it can be cultivated in pots. The present time will be found suitable to commence operations to obtain plants for the conservatory during April and May, either by seeds or by cuttings. The seed—of which a good strain should be secured—may be sown in shallow well-drained pans, filled to within an inch of the rims with equal part of loam, leaf mould, and sand. The soil should receive a good watering previous to sowing, as otherwise, owing to the smallness of the seed, it will be washed down into the soil and much of it lost. After sowing the pans may be covered with a slip of glass and placed in the coolest part of the propagating house. Care must be taken to remove the glass as soon as the seedlings appear, or the condensed moisture from the glass will cause them to damp off. When large enough to handle they should be pricked off into pans or boxes containing a light compost, afterwards transferring them into 5-inch pots, placing four to five plants in a pot, using a good proportion of leaf mould or old hotbed manure with the loam for potting. They should then be taken into the greenhouse and placed on a shelf close to the glass, where, if well supplied with water and occasional doses of liquid manure, they will make rapid progress. As soon as the pots are filled with roots shift the plants into 7-inch pots, using a similar compost, to which a little artificial manure may be added. Some neat stakes must be supplied to support the stems, and in due time they will reward the cultivator with a profusion of their handsome blossoms.

Although this is the only way in the first instance to obtain a stock, the best mode is to afterwards obtain the plants by cuttings, selecting and marking those seedlings of sufficient merit. When taken from the conservatory carefully remove the worthless ones from the pots; those remaining may be cut down and placed in a shady position outside, where they can remain until the end of the autumn, when they should be afforded the protection of a cold frame, which will induce a good quantity of shoots to proceed from the underground stems. These should be taken off early in the year and inserted four and five in a 5-inch pot filled with light soil, in which they will root readily if placed in a shady part of the greenhouse, when large enough shifting into 7-inch their flowering pots, treating them the same as advised for seedlings.

Plants so obtained are by far the most satisfactory, for however carefully the seed may have been saved there is always a certain percentage of inferior varieties in a large batch of seedlings, but by selecting only those of good size and substance with brilliant and effective colouring a

good collection may be formed. The chief point in their cultivation is to grow them strongly without a check early in the season, keeping them well supplied with water, the lack of which will induce an attack of green fly, that if not promptly checked will cripple the foliage and deprive the plant of its vigour.

Seedlings may be raised later in the season for planting out in cool shaded spots during the summer, and from which frequently a good variety may be obtained to add to the collection in pots.—C., *Dorset*.

TRENCHING GROUND.

I HAVE been a reader of your paper for many years, long before it was *The Journal of Horticulture*, when your able correspondents Mr. Keene and Mr. Robert Fish used to advise what should be done in the garden, and if my memory serves me truly they always advised deep digging and often trenching. These men in their day were looked upon as good and practical. Even noble Donald Beaton advised the same practice—viz., deep trenching. These men have passed away and others have risen to fill their places; still, we regard them as thoroughly practical in the profession they followed. I am persuaded it is good to trench ground as often as time can be spared to do so. Thoroughly stirring the subsoil is, in my opinion, the best way to improve any ground for the cultivation of crops, and I have some knowledge of the benefit derived from good cultivation during my practice.

Take as an example a piece of ground that has been cropped for, say, twenty years. It is dug the depth of the spade or fork. The top soil has improved very much since I have had the charge of this ground, but at the distance of a foot below the surface is a very heavy clay soil. This ground has worked well, and it has certainly produced crops fairly well. But in dry hot weather the plants droop, while on another plot near by they are unaffected, and indeed appear to enjoy the heat of the hottest sun. How is this? The only difference between these plots of ground is in the cultivation of the ground. This soil was first of all made workable, and being naturally heavy I put anything in the way of road scrapings with manure, digging it on the flat first, and afterwards placing it in ridges to get it thoroughly pulverised. In three years we had a good soil. I am speaking now of all the ground. One portion was then bastard trenched in this way. A trench was formed 3 feet wide, and down to the hard subsoil; the soil was wheeled to the other side, where the plot was to be finished. Next the bottom soil was forked up as deeply as possible with a steel fork. When well broken a good layer of manure was applied, and over the dung a sprinkling of coal ashes; then another trench was formed just in the same way and the same size as the first, putting the top spit at the top again, finishing roughly.

This is how the good piece of ground has been managed for many years. My plan is very simple, but it is practical I think, and, more than this, it does not require a top-dressing in hot weather. Keep the hoe going, and that is all that is wanted to have all healthy, even in the hottest seasons.

I most certainly approve of deep cultivation and trenching ground. I am surprised Mr. Iggulden does not think it necessary to trench ground, for by his own writings he says he has never lived where trenching has been done. He evidently has another lesson to learn, and a most important one too in the way of cultivating. But in all good feeling to Mr. Iggulden, let me advise him to try trenching ground, not bringing up the stiff heavy clay or stones to the surface until the ground has been trenched several times. If he tries the system I feel convinced he will see its advantage.—H. CAKEBREAD, *Rayners*.

MR. IGGULDEN is a very generous man; most men of real ability are. It is only the know-everything sort of people who cannot brook opposition to the views they entertain on certain subjects; nor do we find that fault-finders as a rule show better work either in the press or the garden than is displayed by those on whom they bestow their attention. Mr. Iggulden is far from being one of that class. What he has done in the cultivation of vegetables entitles him to a place in the dozen best kitchen gardeners in the country, while in his endeavours to teach usefully as on page 29 he sets an example that others, including myself, might follow with advantage. When he "makes a blunder" he says so, and it is perfectly clear he does not object to be told of his mistakes when they are pointed out to him in a respectful manner, and with the object of enabling his teachings to be better understood.

I will now endeavour to point out, from my point of view, the little mistake he made in his almost general condemnation of trenching land on page 521 last volume. I say almost general, because there were qualifying sentences, but these were of such a parenthetical nature that they could have little force with the majority of readers; and the rejoinders that have already been published show that the prevailing tone of his communication was accepted as denunciatory of the practice of deep cultivation that has in instances innumerable contributed so enormously to the productiveness of the soil.

The mistake to which I shall refer is not of a kind to which any reflection attaches, but is solely that of assailing a great principle on insufficient grounds. It is embodied in his own words:—"Strange to say, I have never worked in a garden the soil of which was naturally light, nor has trenching been much resorted to with one exception, and in this case much more harm than good resulted from it." "Never" having had anything to do with "light soil," and only "one example" of trenching as a guide! There is the weakness of a case on which was founded an article which was practically illimitable. Had your correspondent limited his remarks to land like that which he describes as "having been culti-

vated upwards of a century, yet the top spit works badly owing to its clayey nature, and to bring up more clay only makes matters worse," he would have been on safe ground; and possibly his contention, now advanced, that "in the case of all clayey or heavy soils we should spend more money or labour on the surface soil and not attach undue importance to the efficacy of trenching" would not have been seriously questioned. Still, in such a case those who have spent "money and labour" in charring the adhesive mass to a depth of 20 inches know that the productiveness of the land has been doubled, and the necessity for after manuring has been greatly reduced. But that method of treatment is not within the means of all, and such land as described may be managed as advised by Mr. Iggulden. The soundness of his practice, as applied to the soil he has to work, with the means at his disposal, has never been questioned.

Your correspondent, however, does not so restrict the application of his remarks. He even refuses to admit the fact that a three-fold return from land by reducing its depth one-third is admissible evidence in favour of deep cultivation, but endeavours to explain it away because "the season was highly favourable to his heavy land garden." Here again the old error peeps out of founding arguments on heavy land, and inferring their applicability to light soil, for it so happens that the garden in question is as light and gravelly, as can well be imagined, and had not 2 inches of rain during the three hottest months of the summer. The season, then, that was "highly favourable" for heavy land was the exact opposite in the case of soil, the like of which he has confessedly "never worked." I must, therefore, really ask him to accept my evidence on this point, and the assurance that but for the deeper working, with all the surface mulching that could be given, the garden would have been even more profitless than before, so unfavourable was the season for crops in light shallow land in dry districts. This garden is being worked still deeper this year, and nothing but good can result.

I do not know Mr. Chinery, but I believe he bears a good gardener's name, and I cannot help thinking if he had been working in error during forty-five years that someone would have found it out. Yet his experience only proves the practice of trenching "time-honoured," says Mr. Iggulden, not necessarily good. I fail to see the cogency of the argument, and I shall believe that Mr. Chinery has done quite right under the circumstances, and that the garden he has tilled so long would not have been anything like so fertile as it is now if it had only been dug "about a foot deep" during all those years.

There is a gardener named Gilbert that I have read about; he lives at Burghley. Mr. Gilbert has the reputation of being an expert cultivator, and the garden in his charge is, I believe, made to yield extraordinary crops. Is it worked about a foot deep only? I will venture a guess that if it were not worked to twice that depth it would not be anything like so profitable as it is to-day. There is a gardener who writes in the Journal occasionally, and who, according to the reports of some of the leading shows, has won some prizes that are not usually received by men who make mistakes, time-honoured though they may be regarded. I mean Mr. J. Muir, and I have noticed particularly that he lays stress on trenching judiciously conducted. There is another gardener not unknown in the horticultural world—at least, not a few of his compeers at the "big shows" remember him very well. His name is Miles. Does Mr. G. T. Miles dig only a foot deep? Let him answer. Having drained the land he says, "It should be trenched as deep as the nature of the soil will admit. None but those practically acquainted with vegetable culture are capable of fully estimating the advantages obtained in deeply cultivating the land, and the process of trenching should be carried out year after year in a systematic way, so that at regular intervals the whole area under cultivation will in due course be treated in this manner."

And so I might go on. Mr. Iggulden thinks I am "a little wide of the mark" when I say that "deep root-action is brought about by the speedy deprivation of moisture and sustenance from the mere surface soil," and he explains "it is not the deprivation of moisture so much as the poverty of the surface soil that is to blame." He is right in one thing; if I am wide of the mark it is indeed only a "little," for there cannot be a great difference between "poverty" and a "deprivation of sustenance."

We are next taken to Barham Court, where Mr. Haycock grows his preserving fruit, and to Holme Lacy. I will accept the invitation, and I shall not believe, except on the evidence of Mr. Haycock, that the trees from which he gathers his fruit have only about a foot of soil to grow in, and I will leave Mr. Iggulden to write for information if he likes to do so. As regards Holme Lacy it is not necessary to write, for Mr. A. Young was gardener there, and in all his articles on preparing the ground for fruit trees advocates a depth of not less than 20 inches.

Lastly, as regards vegetable culture for market under plough culture in one district, and the trenching system in another; the land in the former case does not let for half the rent that is realised in the latter. What is the reason? Is it not obvious?

I have already said that many needlessly deep borders are made for fruit trees in gardens; and that it is a grievous mistake to bury a foot of good surface soil under a similar or half the thickness of clay, as that is simply abusing a practice that is good when intelligently conducted, for the deeper the soil is in reason, provided it is equally fertile throughout the mass, the greater is its productiveness; and I have a lurking suspicion that if Mr. Iggulden has made any Vine borders that he has prepared the soil a little more than a foot deep. Do Vines need deeper soil than the majority of garden crops?

Some complimentary letters have reached me for which I am obliged; but I prefer acting on the suggestion of one who does not praise

indiscriminately: he says, "Go on thinking by all means, but if you have much to say on one subject, such as tackling a man like Iggulden, let him have it in an article." I have complied, and remain—A THINKER.



THE ANNUAL GENERAL MEETING OF THE ROYAL HORTICULTURAL SOCIETY will be held at South Kensington on February 10th, 1885. The following persons are recommended by the Council to be appointed to the offices of President, Treasurer, Secretary, and Auditors of the Society:—President, Sir Trevor Lawrence, Bart., M.P.; Treasurer, William Houghton; Secretary, Major F. Mason; Auditors, John Lee, James F. West, and William Richards. The vacating members of the Council are the Right Hon. Lord Aberdare, the Right Hon. Viscount Enfield, and J. H. Mangles (deceased). The Fellows recommended by the Council to fill the above vacancies are the Hon. and Rev. J. T. Boscawen, Colonel R. Trevor Clarke, and W. T. Thiselton Dyer, F.R.S.

— DEATH OF MRS. SHIRLEY HIBBERD.—It is with feelings of pain that we have to announce the death on the 21st January, at the Priory Park, Kew, of Ellen, second wife of Mr. J. Shirley Hibberd, the cause of death being peritonitis. Mr. Hibberd, if we remember rightly, had only been married about a year, and we accord to him our sincere sympathy, in which our readers will join on his great bereavement.

— WE regret to have to announce the death of Mr. R. T. Veitch of Exeter, which happened on the 18th instant at the age of 62. He was the last surviving son of Mr. James Veitch, sen., of Exeter, and brother of the late Mr. James Veitch of the Exotic Nursery, Chelsea.

— WE learn that Mr. Harry J. Veitch, as representing the firm of J. VEITCH & SONS CHELSEA, has received the Royal warrant appointing him nurseryman and florist to Her Majesty the Queen, the warrant not being granted to a firm as such, but only to individuals. Mr. Harry J. Veitch is also by Her Majesty's command to present the bridal bouquet on the approaching marriage of H.R.H. the Princess Beatrice, this being the eighth occasion on which either his father or he has been similarly honoured.

— THE statement of the receipts and payments of the GARDENERS' ROYAL BENEVOLENT INSTITUTION reached us too late for publication, but we note that the income during the year was £2486 3s. 7d., and the expenditure £1863 16s. 1d.; £602 5s. has been added to stock, which amounts to £15,950, a balance of £386 8s. 10d. remaining in the hands of the Treasurer and Secretary. We are glad to observe that £1762 4s. 2d. has been collected for the pension augmentation fund during the year and that the amount now invested is £3900.

— HORTICULTURAL CLUB.—The usual monthly dinner and conversation took place at the rooms, 1, Henrietta Street, Covent Garden, on Tuesday evening last. Amongst those present were—Mr. John Lee (Chairman), Dr. Hogg, the Rev. F. H. Gall, Messrs. Cousens, C. T. Druery, L. Upcott Gill, and S. T. Collings. Mr. Druery exhibited pinnae of *Athyrium Filix-foemina clarissima*, illustrating his recent discovery of apospory—*i.e.*, the reproduction of the plant through archegonia and antheridia developed on prothalli, originating not in the normal way from spores, but by direct vegetative outgrowth from aborted sporangia. An interesting discussion took place on the whole subject. The annual dinner of the Club will take place on Tuesday, February 10th, under the presidency of Mr. John Lee, and as it will be the tenth anniversary, a large attendance of members is expected.

— MR. G. WINDSOR, Glangarra Gardens, Carnarvon, has sent us some fine examples of BRUSSELS SPROUTS, "grown from imported seed procured from Messrs. James Dickson & Sons, Chester. The plants are closely studded with firm knobs of the medium size that are acceptable on the majority of tables. Accompanying them was a well-grown example of *Asparagus plumosus*, which Mr. Windsor observes, "lasts in water for weeks." He also sends a flowering stem of the brilliant and curious *Strelitzia regina*, which has such strangely formed flowers and peculiar contrast of orange and blue.

— THE annual dinner of the WIMBLEDON AND DISTRICT HORTICULTURAL SOCIETY took place on Monday evening last, the 19th inst., about forty members and visitors being present. After the viands had received attention and the usual loyal toasts been duly honoured, Mr. Orchard, in a neat and earnest speech, proposed "The Society," stating in the course of his remarks that it had now been established twelve years, and, notwithstanding several ups and downs in the course of its existence, was now in a most prosperous and satisfactory condition—a result mainly due to the energy and tact of the Hon. Secretary, Mr. H. A. Rolt. The last-named gentleman responded. Amongst other toasts that of "The Secretary," proposed by Mr. T. Lynes, was received with great enthusiasm, Mr. Rolt making a suitable reply. The presence of so large a number of visitors should be very gratifying to the Committee, who have worked hard to make gardening popular in the district.

— AT the monthly meeting of the MANCHESTER HORTICULTURAL IMPROVEMENT SOCIETY, held in the old Town Hall, King Street, on Thursday evening, the 15th inst., Mr. Bruce Findlay presiding, Mr. William Plant, gardener, Woodheys Hall, Ashton-on-Mersey, read an excellent and exhaustive paper on "Indoor Mushroom Culture." In the discussion which followed Mr. Bruce Findlay, Mr. Upjohn, Mr. Williamson, Mr. Swan, and Mr. Tait took part, several interesting facts being elicited.

— WE understand that Mr. Forsyth Johnson has resigned his appointment as manager of the proposed ALEXANDRA PALACE FORESTRY EXHIBITION, and it appears probable that the venture will not be quite as successful as was at first anticipated by its promoters.

— WE have received the report of the SHEFFIELD FLORAL AND HORTICULTURAL SOCIETY, and are glad to observe that the finances are in a satisfactory state. Monthly meetings are held by the Society, at which papers are read and discussions ensue; also we observe that prizes are offered to amateurs as well as to gardeners for plants and flowers, and the room is thus rendered attractive, while the gatherings are instructive. Mr. W. R. Woodcock has been re-elected Secretary of the Society.

— WE learn from the *Illustrated London News* that the WILL OF THE LATE MR. GEORGE BENTHAM was proved on the 11th of December by Sir Joseph Dalton Hooker and the Right Hon. Sir Nathaniel Lindley, who are the executors, the value of the personal estate exceeding £23,000. The sum of £8000 is left to Madame Walton, the grand-daughter of the testator's sister; £2000 to Sir H. J. J. Brydges, Bart.; £1000 each to the London Linnean Society and the Royal Society Scientific Relief Fund, with numerous smaller legacies. The remainder of his property is to be held upon trust and to be employed in publishing botanical works or purchasing books and specimens for Kew.

— THE *New York Evening Post* says "The NEW ROSE the BENNETT in Philadelphia is attracting a great deal of attention, as it is to be sold next March for the first time. This Rose is considered the finest crimson Rose that is a continuous bloomer. The bud resembles somewhat the well-known white Niphetos. It has a rich lemon odour, entirely new. So far the flowers of this Rose have only been sold with short stems, because the owners, not offering it for sale, could not cut the buds with long stems, as then they would have been purchased by florists and the slips used to make plants. The owner of the Bennett Rose has kept his greenhouse locked and guarded by watchmen to prevent the cuttings of plants being stolen. Some 7000 dollars has already been paid for the stock, and the owner is under bonds not to sell a plant of it until March, 1885. This person, however, not being a practical florist, is likely to fail in the propagation of it, and some other man in the trade will, in all probability, reap the harvest."

— IT is also rumoured that Mr. H. Bennett has disposed of his widely famed ROSE HER MAJESTY to an American nurseryman for the sum of £500. Roses certainly appear to be appreciated in the new world.

— THE FRENCH VINTAGE IN 1884.—The official returns as to the vintage in France last year show that the total yield was 782,566,335 gallons, or 27,000,000 gallons less than in 1883, but 90,000,000 gallons more than in 1882. With the exception of nine departments in the north-west of France wine is grown in every part of the country; but the nine departments which had the largest crop last year were:—The Aude, 98,364,960 gallons; the Hérault, 69,953,340 gallons; the Gers,

42,920,550 gallons; the Pyrénées Orientales, 31,668,210 gallons; the Loire Inférieure, 31,387,500 gallons; the Gironde, 30,109,095 gallons; the Haute Garonne, 28,499,445 gallons; the Vienne, 27,628,650 gallons; the Charente Inférieure, 25,758,405 gallons. The yield was larger in thirty-nine departments than in 1883, notably in the Gers, the Pyrénées Orientales, and several other departments in the south, but it was much smaller than in the previous year in the north-east and the east owing to the severe frosts of the early spring. The ravages of the phylloxera diminished the yield in several of the southern departments, and 120,000 acres of vineyard had to be rooted up in the course of the year. More than 60,000,000 gallons of "wine" were made from raisins mostly imported from Greece, and from the lees of the Grapes after they have been pressed. Upon the other hand, there is a slight increase in the quantity of wine made in Algeria, upwards of 18,000 acres having been planted in Vines since the beginning of the year. The cider crop, which reached the enormous total of 540,000,000 gallons in 1883, was not quite half as much last year.

EUCHARIS AMAZONICA.

THIS is one of the plants which is a difficulty to many gardeners. They find it growing under the simplest conditions in some gardens, and in others it fails. Having had an unsatisfactory experience with this lovely and indispensable flower myself, I can well sympathise with others who fail with it. When I came here the few bulbs of Eucharis were in a very bad state of health; the foliage was small, crumpled, and greenish yellow. I thought I should soon improve these, and to get on in the meantime I had some bulbs with splendid leaves sent me by a friend. Well, I did not improve the unhealthy plants, and the healthy ones very soon were undistinguishable from the others. I tried all plans and failed with all until in the course of some alterations I was able to supply the plants with plenty of heat, then foliage and flowers were very soon forthcoming. Of late years my experience has been that no plant is easier to manage than this one. We can have it in flower almost all the year round, or we can bring the plants into flower at a given time with certainty.

When once the plants were fairly started bottom heat was not much employed, but we have this advantage where a strong bottom heat is at command, that a greater quantity of flowers is obtained in a given time than when an ordinary high stove temperature alone is available. I know a case where a gardener has a specimen plant of which he is naturally proud but the conditions under which he keeps his plant only gives him one crop of flowers a year. The most natural conditions to keep the plants under with regard to temperature and growth seem to be these. To start them in early spring in bottom heat if possible, take a crop of flowers in April or May, keeping the plants growing in a high stove temperature till June or July; they should be kept under conditions that will rest the plants entirely until about August. These conditions would be little or no water and plenty of air. Started in August to produce flowers for September, the plants should thereafter be kept growing and flowering in a high temperature throughout the winter. The soil we employ is a simple sandy turf without any admixture. The manure the plants require is given from time to time on the surface of the soil and washed in with the waterings. Good drainage is also very essential. I have seen much harm, even to the destruction of foliage, arise from allowing mealy bug undisturbed possession of the plants for a period. Syringing with hot water, soap, and petroleum is a rough-and-ready means of keeping the insect from doing mischief when time for more efficient methods is not to be had. A very good plan is to examine the plants at short intervals throughout the winter and cleanse the leaves thoroughly. When the flowers are wanted to be kept they should be removed as soon as they are fully developed and placed in water in shallow dishes; a little moss prevents the flowers becoming wet. They may be kept in a cool room for a fortnight perfectly fresh, whereas if left on the plant they wither in a few days.—B.

LEEDS PROFESSIONAL GARDENERS' FRIENDLY BENEFIT SOCIETY.

THE annual dinner in connection with this Society was held at Leeds on the 14th inst. Mr. Michael Baynes presided, and the vice-chair was occupied by Mr. S. May. Among those present were Mr. Hicks (Manchester), Messrs. Wrigsley and Chapman (Paxton Society, Wakefield), Mr. Elliott (Huddersfield), and Mr. J. S. Loe. Letters of apology for non-attendance had been received from Mr. W. L. Jackson, M.P., the Mayor of Leeds, and other gentlemen. After the Chairman had proposed the loyal toasts, the Secretary (Mr. W. Sunley) read the eighteenth annual report, which stated that the Society's income for the past year had been £149 15s. 3½d., and its expenditure £117 13s. 11d., leaving a saving for the past year of £32 1s. 4½d. This amount, added to the savings of the seventeen previous years of £675 6s. 5½d., made the total amount placed to the Society's credit £707 7s. 10d., representing the value to each financial member of £6 5s. 2½d. The Society now numbered nineteen honorary and 113 ordinary members.

Mr. Henry Oxley having again very generously offered to give another £5 to further encourage members contributing and reading essays at the Society's monthly meetings, and in order that the essays might impart as much practical information as possible, the Committee decided to apportion the amount into three equal prizes of £1 13s. 4d., in three distinct branches

of horticulture—viz., the cultivation of plants, decorative or flowering; the cultivation of fruit, exotic or hardy; and the cultivation of vegetables. Members had responded by contributing thirteen essays, seven of which were eligible for competition for the above prizes, which were adjudicated by the Editors of the *Journal of Horticulture*. The successful competitors were:—Mr. James Friend, foreman, The Gardens, Iwerne Minster, Shaftesbury, for plants; subject, "Cultivation of the Allamanda." Mr. James Inman, Chapel-Allerton, Leeds, for fruit; subject, "The Apricot." Mr. James Inman, for vegetables; subject, "The Cultivation of the Cucumber." As the essays were the means of exciting much discussion and emulation, and thereby diffusing much useful knowledge, the Committee hoped the members would continue to render them their support.

Mr. Loe, in proposing "Success to the Society," said that the members of that organisation were cultivating the habits of thrift and industry, and were not only providing for the present but for the future. Friendly societies were not only a boon to those who were members of them, but were also of advantage to the country. Habits of thrift and economy engendered by members of such societies must naturally tend to lessen the rates and benefit the community at large. He found that their Society had several special advantages. As members of one particular trade they must of necessity have greater sympathy with each other than if they were a body of men indiscriminately picked from men in various trades. He congratulated them on the satisfactory condition of the Society, and wished them every prosperity. The Secretary proposed "The Honorary Members and Guests." He explained fully the great benefit the honorary members had been to the Society, for since its commencement they had subscribed no less than £300. This enabled the Committee to ensure 10s. a week for twenty-six weeks of illness and 5s. per week as long as the member remained ill, in return for the payment of 3d. per week only. Mr. Sunley remarked that the annual gathering had proved beneficial, so many guests coming year by year, and three of the guests at the meeting made known their intentions of becoming honorary members.

After reading the report of the last year's meeting in these columns two young men joined the Society from Iwerne Minster, Salisbury, and one of them, as above mentioned, was awarded the prize for an essay that he contributed. Mr. Oxley is doing good educational work in offering these prizes, and the Society and its management is in every way commendable.

WINTER-FLOWERING LÆLIAS.

THE genus *Lælia* comprises numerous species and varieties, all possessing considerable attractions and usually occupying an important position were either large or small collections of Orchids are grown. The delicacy or intense richness of the colours that distinguish the flowers, their elegant forms, and the very slight difficulty attending the culture of the majority of the species, render *Lælias* general favourites. Further valuable characters and recommendations are derived from the diverse seasons at which they bloom, for with the exception of a few months a supply of bright flowers is maintained throughout the year. Summer, autumn, and winter have each their characteristic species, all handsome and well meriting attention, but those that flower at the present time seem especially attractive, and a few observations concerning their respective qualities will be seasonable.

Lælias are epiphytal Orchids confined to the American continent, and chiefly abounding in Brazil and Mexico. They are very nearly allied to *Cattleyas*, and to casual observation they are not distinguishable; however, botanists have deemed the possession of eight pollen masses sufficient to separate them as a genus from *Cattleyas*, which have only four, but an approach to this typical character of the *Lælias* is observed in some *Cattleyas*. In habit, form of the flowers, colours, and beauty the two genera approach each other closely. Although the subjects of these remarks are all epiphytal in habit, yet several are cultivated in pots, the species of strongest growth being best suited for that mode of culture, the others requiring blocks. As regards temperature the majority need similar treatment to *Cattleyas*, but several, especially the Mexican forms, thrive best in a cooler house. For those grown in pots the usual compost of peat, sphagnum, and charcoal is suited, the drainage being abundant, and the supply of water liberal during the growth of the plants. These remarks are applicable to the whole genus, but especially to the winter-flowering *Lælias*, of which the most remarkable are briefly described in the following notes.

LÆLIA ANCEPS.—A Mexican species of great beauty that flowers during the dull season, and remains in good condition for a considerable time. It is extremely variable in colours and form of the flowers, but in the type these have broader petals than sepals, both of a fine rosy hue, and a long lip blotched with purplish crimson towards the apex. The flowers are borne on the upper portion of a spike, which is frequently 18 inches in length. The plant is of robust growth and blooms freely, succeeding admirably in pots. Of the numerous varieties, which vary principally in the colours of sepals, petals, and lip, the three following deserve special mention:—

L. ANCEPS VAR. BARKERIANA.—One of the most elegant forms, as the annexed engraving well indicates, and easily distinguished by the sepals and petals being of equal width. They are of a delicate rosy tint, the lip being broadly margined with intense purplish crimson, and streaked inside with a similar hue; in form it is also longer and much more acute than in the type. It was, like the species, found in Mexico, and was named in honour of George Barker, Esq., of Birmingham, in whose collection it first flowered about forty years ago.

L. ANCEPS VAR. ALBA.—A beautiful companion for the one last described, which Mr. W. Bull of Chelsea has placed in commerce. It is a native of Mexico, where it has been found at elevations of 8000 feet above sea level, and consequently is admirably adapted for culture in cool houses. The flowers are pure white, the lip only having a few yellow

streaks, which serve to more clearly show the chasteness of the other portion of the flower. It is a charming variety, and cannot be too highly recommended.

L. ANCEPS DAWSONI.—Another pretty variety that flowered in the celebrated Meadowbank collection about thirteen years ago, after the proprietor of which it is named. It has white sepals and petals, but the lip is streaked and blotched with crimson and purple, the lip undulated and margined with white. When in good condition the contrast is very striking.

Numerous other varieties of this handsome species have been described and honoured with distinct names, and it is seldom that an importation is received without several distinct forms being obtained amongst others of an ordinary character. Whether it is judicious to bestow names upon such variable Orchids, or rather upon so many of these variations, is doubtful, and often appears to the uninitiated quite unnecessary. The fact is, however, with these as with other plants, when the eye becomes trained by familiarity with the leading characters of a species deviations from that character are more readily detected and appear more prominent than they do to those less intimately acquainted with them. Therefore it is that such names become almost indispensable to the experienced and critical orchidist. In addition to the varieties of *L. anceps* already named the following deserve notice:—*L. a. Hilliana*, a pretty form with a lip two-lobed at the apex and having an orange disk. It was named by Prof. Reichenbach in honour of C. G. Hill, Esq., of Arnot Hill, Nottingham, whose celebrated collection of Orchids was described in this *Journal* June 3, 1880, page 436, and accompanied by a view of his principal Orchid house. *L. a. Calvertiana* is in the way of *Dawsoni*, but with narrower petals. *L. a. Veitchiana* is a magnificent variety with white sepals and petals, and a large lip half gold and half white, pencilled with purple. Messrs. J. Veitch & Sons were awarded a certificate for it at Kensington in January, 1882. *L. a. Percivaliana pulcherrima* is also a handsome form, containing in the flower a charming combination of rose, purple, and mauve; it is named after R. P. Percival, Esq., of Southport.

L. ACUMINATA.—This species, also from Mexico, is grown both in pots and on blocks, but it succeeds much more satisfactorily under the latter mode of culture. The scape is slender and arching, bearing near its extremity several flowers of moderate size, and sepals and petals of which are white, of a wax-like texture; the lip also white, with a rich bright purple blotch at the base, imparting a very distinctive appearance to the flower.

L. SUPERBIENS.—Remarkable for its strong growth and the great length the spike attains, frequently exceeding 4 feet, and bearing a dozen or more flowers on the upper portion. The blooms are large, 3 to 4 inches in diameter, with rose-coloured sepals, the petals shaded with darker tints, and the crimson labellum streaked with yellow. It is one of the most handsome in the genus, and requires culture in pots and moderately cool treatment.

L. AUTUMNALIS.—This usually flowers as late as December or January, and, like a few other species, succeeds well on a block. The flowers are large, the sepals and petals purplish with a yellow streaked lip. It varies considerably in the richness of the colouring, several well-marked varieties being known.

L. ALBIDA.—Though placed last on the list of winter-flowering *Lælias*, this species is not surpassed in usefulness by any of those named. It is easily grown, very floriferous, and its delicately fragrant blooms last for several weeks in the most dreary portion of the year. The flowers being white, also render the plant still more valuable, for though we have a great variety of rich shades of colour in *Lælias* generally, there are very few with white flowers, and these are chiefly varieties of other species, as of *L. anceps*, for instance, the rarity of which renders them so high-priced that they are practically beyond the reach of most growers, and in any case comparatively useless for cutting. *Lælia albida*, however, is exactly adapted for this purpose, and whether the blooms are arranged in vases as cut from the plant, or wired singly for bouquets, &c., they are equally valuable. The fragrance, too, is charming and has been aptly compared to "a bed of Primroses;" it is one of those delicately sweet odours which never satiate and seem like reminders of the spring.

The species was described by Mr. Bateman in the miscellaneous notices published in the "Botanical Register" for 1839, who thus refers to it:—"A native of the environs of Oaxaca, whence it was sent to me this spring by the Messrs. Sadler of that place. Its colour is quite a novelty in the genus, all the other species bearing rose-coloured or lilac flowers. It has the graceful appearance of *L. autumnalis*, from which it can scarcely be distinguished in habit. Its flowers are very different in their form (as well as colour) from all the other species; they are about 2 inches across, sweet-scented, and excepting a bright yellow streak down the centre of the lip, and a few crimson dots at its base, are of a uniform semi-transparent white. It appears to be of easy cultivation, and the most free-flowering individual of the genus." In the same volume of the work named a coloured plate is given of the plant, and Lindley there states that it was found by Count Karwinski in cool places near St. Pedro, in Oaxaca, Mexico. It appears to have found its way into England through several channels. It was in the possession of Mr. Bateman, a Mr. T. Harris purchased with some Cacti from a French collector, and a plant was included in the Kew collection, though it did not flower until 1842. Since then numerous varieties have been obtained, and one of the best of these is

L. A. MARIANÆ.—A sketch of a plant of this variety from a specimen in Mr. James's collection, Lower Norwood, is given in fig. 11, and shows the character well, though the tips of the sepals and petals should be darker. The chief beauty of this form consists in the purple-tinted lip

which contrasts admirably with the white sepals and petals, these, however, being slightly tinted at the points. It flowers at the same time as the ordinary type, and while equally useful in all the qualities of that as regards freeness and durability, it is a welcome acquisition owing to the distinct colouring of the lip.

Of the other varieties named the following are worth notice, though they are mostly scarce:—*L. a. brunnea*, described as having "horse chestnut brown" sepals and petals, but I have not seen it. *L. a. ochracea* has pale brown sepals and petals and a purple-veined lip. *L. a. rosea* has the sepals, petals, and lip tipped with rosy purple, a very pretty form. *L. a. superba* is chiefly remarkable for the much larger size of the flowers. *L. a. Stobartiana* has the sepals and petals tipped with purple, and the lip margined with rich purple. *L. a. Tuckeri* is described as having violet-tinted flowers, but if it is now in cultivation, which is somewhat uncertain, it must be very scarce.

It will readily be seen from the foregoing list that the value of *Laelias*

available. During several years' experience where the soil of the garden in my charge varied in depth from 3½ feet in some places to less than a foot in others, I found it necessary to consider the extremes in the depth of the soil at my disposal in relation to the requirements of different crops, and act accordingly. A portion of one of the squares where the soil was deepest on one occasion was selected bog peat for Carrots. The land during the process of trenching was liberally dressed with farmyard manure and seaweed in about equal quantities, the surface being afterwards prepared for the seed, which was sown in due course. A finer lot of roots than was lifted the following autumn could not be desired, and that without more trouble in the growing seasons than the usual hoeing, weeding, and thinning. Good clean Carrots were produced on other parts of the garden, but they were not comparable with the first-mentioned crop, which shows the advantage of suitable soil and liberal treatment combined.

Grown on similar soil good crops of Peas were regularly obtained, free



Fig. 11.—*LÆLIA ALBIDA MARIANÆ*.

for winter cannot be overrated, for numerous beautiful flowers are obtainable from a few species that will greatly brighten a house from November to February.—LEWIS CASTLE.

KITCHEN GARDEN NOTES.

IN some parts of the country, more especially in mountainous districts, such as the Highlands of Scotland for example, the depth of soil within a comparatively small radius is often extremely variable. The formation of a kitchen garden on a site answering to the above description is objectionable, and should never be proceeded with if a better one of the required extent can be had within a reasonable distance of the mansion. A site at once convenient and satisfactory is, however, not always at command, and of course it only remains to make the best of the one

from mildew. Speaking of mildew with regard to its attacks on Pea crops, I am not of the opinion that cold wet seasons are the direct cause of the production of this fungus. Other conditions undoubtedly operate to produce it also. In 1872 and 1873, two of the wettest seasons on record, I never had more satisfactory crops of Peas late in the season, and in a position such as is considered favourable for mildew. On comparing subsequent experience with the above I consider the success referred to as chiefly the result of new soil, newly drained, and deeply wrought.

LAYING OUT NEW GROUND.—In preparing new ground for the cultivation of garden produce, mineral substances may occasionally be found present. While some of these are not only harmless but form the best of soils, after having undergone a process of natural pulverisation, others are injurious to vegetation. When material of this kind is found it should be got rid of, beyond the possibility of injuring plants, by

turning it into the bottom of deep trenches, where it may assist in making up the ground level. When this cannot be effected it should be removed from the garden. I knew an instance of several thousands of coniferous plants being destroyed which had been recklessly planted on a so-called nursery ground, which consisted largely of an injurious mineral substance. On forming a bank as an addition to a kitchen garden on one occasion I had a good deal of bad material to deal with. In building a garden wall it was resolved to enclose the bank with a view of improving the general appearance of the garden as much as for any addition to cropping space. Covered by a considerable depth of bad soil and rocky *débris* it seemed at first that the bank would be of no avail as a useful addition to the garden. The chief difficulty foreseen was the probable scarcity of good soil, as it was desired to secure an average depth of at least 10 inches over the bank. This was managed in the following way:—In some places the depth of good soil was considerably greater than was required, and wherever this occurred it was removed and heaped on the surface in the process of trenching. The trench was then filled partly with the bad soil and rocky *débris*, and the surface level made up with good soil. This was supplemented with soil which was excavated in the formation of a walk which was proceeded with along the bottom of the bank at the same time; much of the rocky material being suitable for the bottom of the walk was thus easily got rid of in a very useful manner. By continuing this system the work was satisfactorily finished. Good farmyard manure was afterwards spread over the surface as thickly as could be covered in again, lightly digging the ground.

In the latter part of the spring Strawberries were planted on the greater part of the bank, which made vigorous growth and plump crowns, although the following summer was a very dry one. Although very good crops of Strawberries can be obtained from shallow soils for a year or two, they cannot be expected much longer unless new plantations are made and liberal treatment afforded them in the form of frequent mulchings, which, besides their nourishing effects, serve as a protection from severe droughts and frosts alike.

COMPOSTS.—There is much valuable material on most estates which should not fail to be utilised, especially when it is necessary to increase the depth of soil. Road grit of a heavy texture judiciously mixed with quicklime was used very successfully for many purposes in a large fruit and kitchen garden where I was an assistant. More recently I formed a plot, where the soil had been useless, with road grit amongst which horse droppings and leaves had accumulated. On this Potatoes were planted, and the result was a good crop of extra good quality.—D. M.

AN INTERESTING FLOWER BORDER.

I SEND an account of a flower border which has been very attractive during the past season. It was 11 feet wide by about 30 long, in front of a conservatory which had a high front of glass. It was planted with the following:—The front of the conservatory was covered with wire netting to about two-thirds up, and against it were placed large plants of Clematis Jackmanii, with good plants of Echemocarpus scaber; the red and yellow flowers of the latter blended well with the former, and had a telling effect. To cover the lower part good plants of Plumbago capensis were employed, which flowered well. Next to these was a row of single Dahlias, then large plants of the old Tom Thumb Pelargonium, 3 feet high. In front of these came white Abutilons, then a row of large plants of Echeveria metallica and Canna mixed. After that a row of a white Fuchsia called Queen of Hanover, then Vesuvius Pelargoniums. Next to this were large plants of Beauty of Calderdale Pelargonium, planted low, in front of which was Lobelia Emperor William planted rather high; then followed a dwarf Begonia of very pretty foliage, much like Pearcei, and the whole was edged with Echeveria secunda glauca. This arrangement seemed to suit everyone's taste. The plants were all old ones—that is, the youngest not under a year, while others were three or four; and this, I fancy, had a good deal to do with their flowering so freely, whereas younger plants, such as Pelargoniums, Fuchsias, Lobelias, and others, would have turned to growth more than flower at first.

The Plumbago was very conspicuous in other parts of the garden, and I think it should be more grown than it is for outdoor decoration. There was a large vase standing on a high pedestal in the centre of a circular bed cut into a series of triangular shapes. Around the bottom of the vase a wire frame placed so as to meet at the top of the pedestal in the form of a cone. This was covered with plants of Plumbago, which formed a mass of bloom which could be seen at a great distance, and was much admired from its distinct colour from the ordinary plants generally used in the flower garden.—THOMAS RECORD.

HORTICULTURE AND CHRYSANTHEMUMS IN AMERICA.

THE following is a portion of a letter recently received by Mr. W. K. Woodcock from Mr. John Thorpe, a member of the firm of Hallock, Son, and Thorpe, Nurserymen, Queen's, New York, U.S. America, and some twelve years since of the firm of Bell & Thorpe, Nurserymen, Stratford-on-Avon, England, whom many readers of the Journal will recollect as having been for several years very large and successful exhibitors at most of the principal shows throughout the country. Mr. Bell writes:—“I have had a regular Waterloo, but I was Wellington. We have had a month's fight about The Queen and her position. Never in the history of Flora has there been so much interest taken in the Chrysanthemum as this year. I have done what I never can expect to do again. At the Show of the New York Horticultural Society, held on November 3rd and

4th, I made forty-three entries, and was first only forty-three times. My modesty almost shocked me. Whilst my success did not make me buy the whole country, I yet felt that I had something to be proud of. How I wished you were here to have helped me to celebrate the occasion. I shall send you some of our monthlies with further accounts, sufficient to say that no such standard plants have ever been seen. I had six, each 10 feet high, with proportionate heads and bloom, good flowers, fine colour, and vigorous foliage. My other plants were good, as also were my cut blooms; besides which I had twenty certificates for seedlings.

“At the exhibition of the American Institute I had twelve first and six extra prizes. At Boston, 400 miles away, I received the silver medal of the Massachusetts Horticultural Society for 100 varieties of cut flowers, five blooms of each. We advertised a special show at home for three weeks, and have been crowded with visitors. We filled four houses with plants. I have about forty seedlings I expect to name this year. One I have dubbed “W. K. W.” is a most promising incurved. Unfortunately the plant was small, but it is a most beautiful colour, between Venus and Prince of Wales. I shall not let it out this coming year, it is too good to let slip if it keeps up its good character and appearance. I intend to soon send you a lot of my seedlings by some of the officers on Cunard, White Star, or Inman steamers to Liverpool, they can then go by express to Sheffield. Some of my Japanese singles are very large and beautiful.

“My seedling Pelargoniums, double and single, are very fine. I have one of them also dubbed “W. K. W.” This last Tuesday was monthly meeting of the New York Horticultural. I showed a grand lot of Geraniums, Carnations, and 150 varieties of cut Chrysanthemums. That ends our exhibitions for the year. It has been a very busy laborious season for me, but one crowned with success. I have not missed a single first in Carnations, Pelargoniums, Dahlias, Gladioli, Phloxes, Chrysanthemums, or Amaryllises. I have not much spare time on my hand, as now I have at least a month's work on our catalogue, and I have to reserve such work for evenings. I have just accepted the offer to read a paper before the New Jersey State Horticultural Society the last day in the year, and thus end a busy season. I am enjoying good health, and feel as young as ever.

“My prediction is that the Chrysanthemum will be grown here ten times more than now. They seem to have just reached the hearts of the people. Of the flowers in New York at this season Roses are promising to be fine. Bennett's Duke of Connaught, Niphotos, Perle des Jardins, Cath. Cook, Bon Silence, and Safrano are in the largest quantities. They are cut with stems at least a foot long, and realise about 3 to 20 cents, according to demand. There is a flower mart where the growers, buyers, and shop-keepers, meet every morning, and the prices are hardly ever the same two days together, the difference sometimes being remarkable. I forgot to mention La France as being very beautiful indeed this year. I expect there are not less than 30,000 Roses brought into market every day, and I suppose 100,000 Violets, Lily of the Valley, Narcissus, and Roman Hyacinths form the other flowers in quantity. At one of the large weddings in New York last week the floral decorations cost 10,000 dollars. There were 800 dollars worth of Lily of Valley alone. The chances are there will be one or more such decorations every two or three weeks until Lent. The New York people are very extravagant in all their society matters, each one trying to surpass the other one.”

HORTICULTURE IN 1884.

THE commencement of another year affords one an opportunity of reviewing the events of the past year in their bearing on our favourite pursuit; and as I have already reviewed the year in its bearing on one branch of it in which the readers of the Journal are deeply interested—the culture of the Rose, I would now somewhat enlarge my vision, and survey the whole field as it presents itself to one who, with a very omnivorous appetite in such matters, has as many opportunities as most people of seeing and hearing what is going on around; and although I may form very unwise opinions, still at least they will have the merit, I hope, of not being crude or formed on insufficient data.

We naturally in writing upon horticultural matters revert in the first instance to the Royal Horticultural Society, which ought to have an existence more independent and suitable to its position as the centre of horticulture in England. The time may come when it may be so. It has, however, had an opportunity of showing that it possesses the confidence of the gardening world by the Daffodil Conference held early in the year; and although the object was not of equal importance with the successful Apple Congress of last year, yet the manner in which it was responded to by all growers of the flowers must have been gratifying to all who desire to see the Society exercising its undoubted right of being the moving power for horticulture in England. Its fruit and vegetable shows organised under the auspices of the Healtheries showed also what horticultural skill there is in the country, while it also displayed the widespread taste for gardening that exists amongst the wealthier classes, far more so indeed than in any other nation. Its fortnightly meetings have not diminished in interest, and it is there one expects to find whatever is new or valuable, and much which shows the excellence of culture practised by English gardeners. The Royal Botanic Society has had on the whole a prosperous year. Their exhibitions are always, when the weather is fine, well patronised, and their gardens, unlike those of South Kensington, ever a pleasure and delight. As to other Societies, the Manchester Botanical Society has again justified its claim to being the most important one out of London. Its Whitsuntide Exhibition was, as usual, a great success, while in the helping hand it gives to other Societies it shows an example of liberality worthy of all imitation. The Forestry Exhibition at Elin-

burgh hardly touches on horticulture. It seems to have been, however, a great success, although the equanimity of the exhibitors seems to have been disturbed in a very unusual manner by the decisions of the Judges—unusual, at least, as far as we Sassenachs are concerned, for one very seldom hears of protests and alterations of prizes at English shows, but they are not so rare across the border. Whether it is that Scotchmen do not know when they are beaten, or whether there is something wrong in the manner in which judges are appointed I know not, but such complaints are not unusual. The usual history of provincial societies has been repeated, some continuing as vigorous as ever, others perishing under the influence of bad weather or bad management; others starting into existence full of hope and the elastic spirits of youth. To all such youngsters we wish success. Let him keep a sharp look-out on the fairness of exhibitors. Some people seem to have a very elastic conscience in the matter of showing other people's productions as their own, and seem very much astonished that such a proceeding should be considered dishonest; but it is such things winked at or condoned that go far towards causing the break-up of many Societies.

The year has not been remarkable for any very startling novelty which has taken the world by storm, as has sometimes been the case. We have nothing like the furore created by *Vanda Sanderiana* last year, and the most notable examples of Orchids have been amongst varieties of well known species rather than in new species, if we except *Aerides Sanderiana*. Thus *Cattleya Trianae* has been represented by two new and handsome varieties. So *Odontoglossum Alexandrae* has been shown in two new and grand varieties, and *Odontoglossum crispum* (is it not that var.?) in no less than six varieties, amongst them the splendid variety of Baron Schroder's *Veitchi*; and it would almost seem as if some of these Orchids were assuming the character of florists' flowers in the number of their varieties and in the different shape and character of their flowers. Amongst greenhouse plants perhaps no flower has shown greater advance than the *Amaryllis*, and the varieties for which Messrs. Veitch obtained no less than nine certificates, show how great is the advance and what admirable flowers they are for the decoration of greenhouses. Descending from those aristocratic denizens of our stoves and greenhouses to those commoner objects which so many more cultivate, although since the cooler system of growing Orchids has been adopted the number of Orchid growers has greatly increased, no flower has made such rapid strides as the *Chrysanthemum*. The number of exhibitions and the value of the prizes offered by them have both increased, and from all parts of the kingdom we hear of new societies springing up and old ones extending their operations and increasing their prize lists; nor is this to be wondered at. The easiest of all flowers to cultivate, thriving in the open ground, the greenhouse, or the poor man's cottage, coming into flower at a time of the year when, except with the wealthier classes, flowers are a thing of the past, varied in its colouring in the character of its blooms, useful for cutting for the bouquet or vaso, standing well the confinement of the hall or sitting-room, its claims to patronage are indeed manifold, and it is no wonder that we from year to year see it advance in popular favour. As a consequence of this we have the multiplication of varieties, and here lies the chief danger of the present high tide of popular favour. Not only are flowers identical with those already in cultivation likely to be palmed off on the public, but worthless varieties are sure to be introduced in large numbers, and those growers for sale who will resolutely set themselves against both these practices will deserve well of their country. The attempt to popularise the single varieties has proved a failure so far, nor do I think it is likely to gain much way.

The "craze" for single Dahlias shows signs of abatement. We have had only one first-class certificate awarded this year, while last year seven were awarded in one day by the Floral Committee; and this is as it should be. We do not want to see gardens crammed, as I have seen some, with these single flowers, although a few of various colours are, I think, indispensable, not for the beauty of the garden (for their tendency to form seed-pods disfigures them very much, and they need to be gone over almost every day to prevent this), but for cutting. For this, I think, the smaller varieties are better adapted, the large ones are too coarse. The tuberous-rooted *Begonia* seems to have reached its full development both in the single and double varieties, and it is now openly advocated that the best way to grow them is to do as has long since been done with the *Cineraria* and *Calceolaria*—grow them from seed each year. It is hardly possible that for either size or brilliancy of colour we can get beyond those already in existence. One wonders now in looking round upon the lists of flowers that are in our gardens on what next the hybridisers will try their hand. Almost everything seems "used up," and like Alexander the hybridiser may feel inclined to sigh that he has no new worlds to conquer. The taste for herbaceous and alpine plants shows no diminution, and here again caution is necessary. It does not follow because a plant belongs to those sections that it is a desirable thing to put into our gardens, and unless to those persons who desire to grow collections the multitude of species is bewildering. Those of us whose means and space are limited are obliged to be very careful in such matters; and one cannot but hail with pleasure the increased activity in this direction shown by Mr. George Paul of Cheshunt, as thereby giving another facility for lovers of those most interesting plants to see and judge for themselves as to what additions they should make to their gardens.

The review of the past year would be incomplete if we did not look at the death roll and notice some few of those who have during the past year been called away who have been known amongst us as horticulturists, and who have advanced the interests of the craft we love. By the death of Mr. Mangles of Valewood, Haslemere, the Royal Horticultural Society lost a devoted and wise friend, and horticulture one of its most scientific

growers. He was especially strong on Rhododendrons, which he cultivated with great success. Amongst amateur gardeners we miss Mr. Isaac Anderson Henry and Mr. Sam Mendel, whose wonderful collection at Manley Hall in the days of his prosperity was one of the sights of the north, and Mr. Henry Bohn, whose interest in horticulture continued up to the last, although he died at the advanced age of eighty-eight years. Two celebrated gardeners of celebrated places have also passed away—Mr. Speed of Chatsworth, although his death really took place in the closing days of 1883, and Mr. Fleming of Cliveden, both of them types of first-class gardeners, knowing much, yet unassuming in their manner, and always ready to give information to those who sought it at their hands. Florists will regret the death of Mr. Rylance of Ormskirk, and a name more widely known still, Mr. George Rudd of Bradford; he was an enthusiastic grower of Carnations and Picotees, and an intimate friend of Mr. Thomas Woodhead of Shihden Head, the famous *Auricula* grower, whose surplus stock he latterly used to distribute. What would have been indeed a calamity had it ended as was at one time feared hung over us during the closing months of the year, but which was averted—the serious state of Mr. George Prince of Oxford, owing to an accident; the widespread sympathy which it evoked showed how much he is esteemed, and let us hope that he may long be spared to the Rose-loving world.

The review of the past year would be incomplete if I did not refer to that powerful lever in horticulture, the gardening press. The Journal shows no sign of the infirmities of age, but has rather renewed its youth; and while contributors change, the varied and practical character of the paper shows no diminution of interest. Monthly papers have departed. They did their work well; but the hurry-scurry of the times will not be satisfied to wait for a month, but must have their weeklies instead, and these have increased marvellously.

In thus hastily passing in review the past year we see, as in everything else, it has had a chequered, but on the whole a hopeful, career—such a one as may lead us to say in a right sense that this year may be as the past, and much more abundant.—D., *Deal*.

LORD NAPIER NECTARINE.

As far as my experience goes, I think Mr. Muir and Mr. Bennett are both right regarding the qualities of this fine Nectarine. In the early spring of 1878 I planted a tree of it on the south side of our great orchard house here, and the only year that it was really fine was in 1880, which in this part was a splendidly dry and warm summer. The fruits were large, well coloured, and of good flavour. In 1881 and 1882 they were altogether so inferior that another sort was substituted for it in 1883. It is evidently not adapted for a cool orchard house in this climate, yet under different conditions it is a grand Nectarine. I saw it fine in a narrow lean-to house at Gunnersbury Park last season, and with warmer treatment it deserves all that has been said in its praise. Victoria, another useful Nectarine, behaved exactly the same way as Lord Napier in our orchard house, and has shared the same fate. Pine Apple, Humboldt, Pitmaston Orange, &c., all do well. Pine Apple we gather till the end of October.—D. THOMSON, *Drumlanrig*.

TIGER FLOWERS.

TIGRIDIAS are unique in their way, favourites with most people when seen in flower, but many upon learning that the individual blossoms are beauties only of a day despise them; but this peculiarity should not prevent them from finding a place in most gardens, and especially in private establishments. There are many positions in such eminently adapted to their requirements—warm corners by the stove or Orchid houses, in which they would be permanently happy; in such places, with efficient drainage, I am sure they would give a minimum of trouble, and in their season surprise more people than the most attractive Orchid. Be sure of this, there are no more brilliant and beautiful flowers for the time being than *Tigridias*. I know several clumps at the foot of a stove wall which are yearly much admired. The situation they occupy was at the time of planting well drained with 6 inches depth of crocks. A mixture of loam, leaf soil, manure, and sand was prepared and put about the bulbs, which are about 6 inches below the surface. It is now some years since this was done, and they are fine clumps, requiring no attention but occasional waterings in dry weather and a yearly top-dressing of fresh soil, composed of equal parts of loam and old hotbed manure. I have grown a large number of Tiger Flowers, and, with the exception of the rare *T. celestis* and the curious *T. undulata*, I find them all much benefited by plenty of manure. For example, last April I planted 500 bulbs of *T. Pavonia* and as many of *T. conchiflora* (small bulbs), and some of them were so shrivelled that I entertained small hopes of their recovery. They were planted in an open sunny position in light sandy soil, with a good layer of manure arranged just beneath the rows of bulbs. The result was perfectly satisfactory, for in November they were lifted—large plump bulbs with side bulbs larger than the originals.

With regard to *T. undulata*, a word as to its behaviour after importation may be opportune. The authorities of the C

Town Botanic Garden are offering it with many choice bulbs, and I know of several who are purchasing it, and of course many others will do so. From experience I may say there need be no surprise if the flattened bulbs lie dormant for a year or so without revealing the slightest signs of life, as it seems to be peculiar in this respect. I have some imported two years since which are still dormant, but apparently plump and good.

In cold and damp situations it will be best to lift the bulbs every winter and replant in spring. I do this for the same reasons. They may with safety be put in the ground early in April, as they are some time before they show above ground; indeed there is no fear of them doing so before the most treacherous season is past. They may remain until the stems are cut down by frost, when it is necessary to lift and lay them in a cool place to dry off gradually. In storing, they should be treated similar to the hybrids of *Gladiolus gandavensis*. As well as keeping the bulbs during winter in frost-proof quarters it is equally needful to keep them out of the reach of mice, as these are very fond of the bulbs. Hence it is also important to watch any c'mps which may be left out all winter in the positions mentioned above, or they will be devoured speedily when once the larder is found.

When planting, let me urge the advantage of applying manure freely. See that the position is a warm and well-drained one, and during dry weather give plenty of water, and I am sure they will render a good account of themselves; for although the individual flowers are fugacious, several of them are produced upon each stem, and a fair clump throws up a good number of stems, so that a lengthened and effective display is the result.

The number of forms is not very large. The three best in my opinion are *T. speciosa alba*, *T. conchiflora*, and *T. Pavonia*. The first is charming, the flowers pure satiny white, barred in the centre with carmine-crimson, and slightly blotched yellow; a most delicate-looking beauty. *T. conchiflora* has flowers of almost an orange yellow colour, much barred with crimson, a dwarf, free and very effective species. *T. Pavonia rubra* has flowers of a richer scarlet than the species, barred and spotted with crimson lake, also sparingly yellow in the centre. It is a strong growing, and the flowers are very large. Besides these there are *T. canariensis*, yellow barred with rose scarlet; *T. speciosa*, rose scarlet barred and spotted with crimson, and the ordinary *Pavonia*. I might say they do well in 6-inch pots, many are grown thus by cottagers in parts of North Wales, and I have seen plants thus cultivated very fine.—T.

EXHIBITING ROSES.

MIGHT I be allowed to make an appeal to the Executive Committees of Rose Societies throughout Great Britain—to wit, to fix the latest moment possible for the admission of Rose boxes to the exhibition room or tent, say as late as 11.30 if possible? They could be ready then for the judges by 12.15. This would allow exhibitors from the neighbourhood until 6 A.M. to cut their blooms, instead of getting up at 4 A.M. Roses should be cut dry, and by six the dew is off. Rain must be risked, or umbrellas be put on overnight. Exhibitors from a distance who, maybe, have to travel all night and arrive, say at Manchester or Liverpool at 3 A.M., might take "forty winks" comfortably in bed, before breakfasting at nine, and then have time to overhaul their boxes before taking them to the show.

Further, might I strenuously urge all Rose Societies to adopt the National Rose Society's plan of selecting judges—that is, to select three judges from the exhibitors in Class or Division A to judge Class B, and three from Class B to judge Class A, and so on. This saves much time, and the expense of a paid official, excellent as the latter may be individually.—FRANCESCO.

ORCHIDS.

[A paper read by Mr. D. Birt before the Caterham Horticultural Society, December 12th.]

(Continued from page 48.)

THE leading feature in all the floral arrangements of Orchids is this, that the insect contracts pollen only when leaving the flower. Were it otherwise, danger would exist of self-fertilisation. Permit me to refer to one more Orchid which exhibits in a remarkable degree, shall we call it, cleverness of device.

The drawing (fig. 15) depicts the organs of a common English field Orchid, called the Early Orchis. It is copied (by permission of Mr. Murray) from a plate in Darwin's book. The calyx and the petals have been torn off, with the exception of the under side of the lip, which is left in order to show how an insect would land on the flower. The pollen masses are within the anther as you see. At the end of the tail of each pollen mass there is a round attachment or disc, on the under side of which is a ball of

glutinous matter. This matter may be called cement, for it has the property of drying hard in about half a minute after the pollen mass becomes detached from the flower. Whilst it is unsevered and remains encased in the covering which surrounds it the moist state of the cement continues. The stigma you will notice beneath the anther.

Now suppose an insect to enter the flower. In the act of forcing its proboscis into the nectary (the tube at the back of the flower) it cannot avoid touching the foot of the anther case. The slightest possible touch suffices to open it. The ball of cement becomes exposed and attached to the insect, and leaving the flower it carries one or both of the pollen masses. But you would naturally say, "If the pollen mass stands upright upon the creature's head or back, how can the pollen reach the stigma of the next flower he visits? for the stigma being immediately in front of, and in a line with the creature's head, the pollen, instead of touching the stigma, would simply touch the bottom of the anther case of the second flower." This would undoubtedly be so, and fertilisation would fail were it not for a most curious property of that little disc at the end of the tail of the pollen mass. The upper surface of this disc in about half a minute after severance from the flower, contracts in one particular place, and thus causes the pollen mass to become depressed, so that it no longer stands upright, but forms, as it were, a horn standing out in front of the insect. In the upper of the two drawings (fig. 13) I have attempted to depict an insect with the pollen mass attached as it would appear on leaving the flower, and in the lower one the appearance it would present after a lapse of about thirty

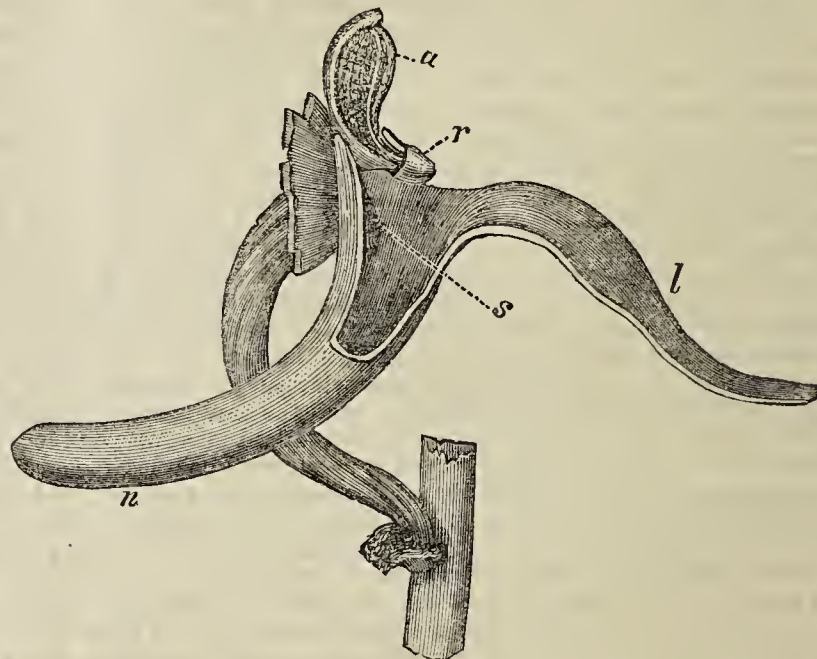


Fig. 12.

A.—Side view of *Orchis mascula* flower, with all the petals and sepals cut off except the labellum, of which the near half is cut away, as well as the upper portion of the near side of the nectary. a, anther, consisting of two cells; r, rostellum; s, stigma; l, labellum; n, nectary; p, pollen-mass; c, caudicle of pollinium; d, viscid disc of pollinium.

seconds, when the pollen mass should have become depressed by reason of the shrinkage of the front portion of the disc. If you will again refer to the flower you will see how nicely adjusted now is the pollen mass for touching the stigma of the next flower visited. It may perhaps be asked, Why does the depression take place in about thirty seconds? The only answer I can give is, to state an ascertained fact—viz., that it takes the insects which mostly visit this flower about thirty seconds, on an average, to leave one and enter another, so that by the time a second flower is reached the pollen mass is in position to strike the stigma. That person must be insensible indeed who cannot be moved to admiration of these strangely constructed forms, each having its own marvellous arrangement for securing the continuance of its race.

The idea is not unfrequently met with that flowers bloom and birds sing and Nature gaily apparels herself solely for man's pleasure. A little thought, however, with the facts, for instance, in our mind as to the relations and mutual dependance of flowers and insects, suffices to negative this idea. As reasonable would it be to say that fleas were created to annoy man, or alligators to eat him, as to say that flowers bloom merely to gratify him.

The truth is, the more we see of that one chief mystery of the universe—life—that never-ceasing energy which meets us at every turn, and asserts itself under infinitely varying conditions; the more, I say, we study the manifestations of this great mystery (for its inner secret we cannot learn) the more disposed do we become to regard all life, as well of plant as of animal, as one in

essence, and the more plain to us does it become that even man's physical life itself falls into line with the universal life.

And what is our proper attitude? Is it not one of constant and earnest endeavour to cultivate those conditions and surroundings that best promote our growth and health, physically, mentally, and spiritually? Is it not, in short, an attitude of simple obedience to the law of our being? Every plant has such a law. Give it its required conditions of light, air, soil, moisture, and shelter, and it thrives by an infallible law which never fails.

Man in like manner thrives if he respects the law of his being; if he so governs and regulates for himself (as he of all living things can best do) the little drama of his life in accordance with this law; if he will be diligent he will not want the necessaries of life; if he will be temperate and self-denying he will enjoy health of body; if he will cultivate the intellectual part of his nature he will have enjoyments that will compensate for the toil of life; if he will he may take the domestic and other cares of life as opportunities for learning fortitude and courage; if he will he may by courtesy and good feeling get rid of the

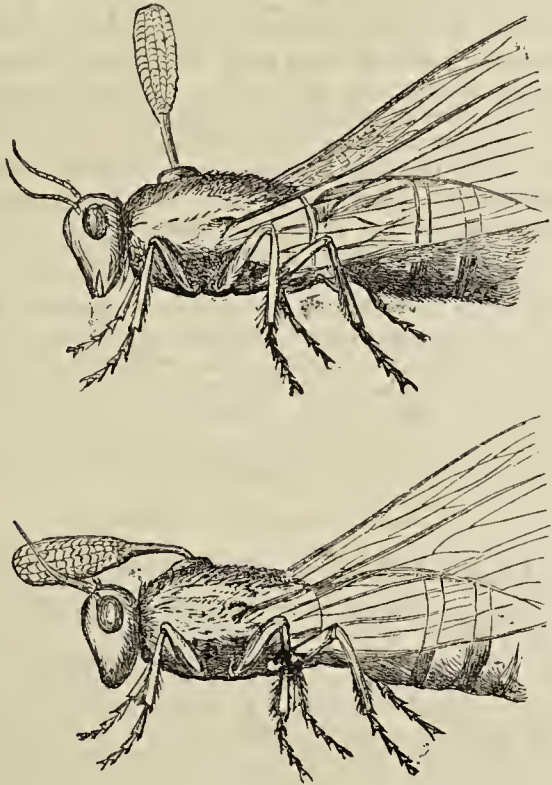


Fig. 13.—Insects bearing pollinia.

friction of life; and if, above all, wisely putting from him the insoluble problems of the future, he will confide the final issue of his life to Him who called it into being, he will have a contentment which nothing can take away. If he practise this diligence, if he enjoy this health of body and of mind, and if he possess this contentment, then may we fitly speak of man in the old Hebrew figure as "a tree in the garden of God."

ROTATION OF CROPS.

AS you have been good enough to publish my article for the guidance of an "Ex-Foreman," I wish to add a few remarks to it. I would strongly advise an "Ex-Foreman," as a beginning at any rate, to number all the quarters and borders in the garden, noting their aspect and position, and at once take an account of the crops standing in them, and when they are likely to come off, also the different plots of vacant ground. If possible also note the sort of crops that have been taken from them during the past summer, then set out a regular plan of cropping for the coming season. This will enable him to vary the cropping so as to avoid in a great measure a repetition of the same crops. Keep a diary of the treatment of the soil, whether trenched or only dug, and when manured, and how the crops turn out. This will be found a most reliable guide for future operations, and enable an "Ex-Foreman" to make his kitchen garden what I always maintain such a garden should be, one of the principal features in a private establishment.—THOMAS RECORD.

REVIEW OF BOOK.

The Rosarians' Year-Book. London. Bemrose & Sons, 23, Old Bailey and Derby.

THIS welcome annual, edited by Rev. H. Honeywood D'Ombrain, has been approvingly referred to by a correspondent, "J. A. W.," than whom few persons are better competent to estimate the merits of a work of this nature. Our opinion of the edition is that it is the best and most useful of the series that have yet appeared, and it may be perused with advantage both by the amateur rosarian and the general gardener who is expected to grow Roses well in common with other flowers. If informa-

tion is good, no matter from whence it comes, it is accepted readily by receptive minds. Gardeners have on many points imparted instruction that has been gladly received even by expert amateurs and specialists; and in return the latter are in a position to teach soundly on those subjects of which they have made a "life study." As Mr. Horner can give valuable hints on Auricula culture, so the contributors to the "Rosarians' Year-Book" can and do convey useful information, and withal in a very pleasant entertaining manner. The subject of pruning Roses, both as to manner and time, is exhaustively treated by gentlemen who have proved their competency by their success—namely, Messrs. G. Baker, E. R. Whitwell, and T. B. Hall, and their experience is the more general interest since it has been gained in widely separated districts; indeed, a special feature of the work is the wide geographical and climatal field that it covers. We are taken from the sunny valleys of Kent to a cliff that is so "fine and open" that after a gale the "Cabbages lie roots upwards" in Mr. Biron's garden; and from Liverpool and Durham to a tour on "precipicing" for Roses in Lisbon, Madeira, and the Azores so agreeably described by Mr. Gray. Mr. George Paul tells us which are the best and—what is not less useful—which the worst Roses as bedding plants and for pegging down. The Editor, fittingly and ably, gives a review of the Rose and National Rose Society in 1884, and Mr. Edward Mawley reviews the weather of the past Rose year, and continues to make such an old-fashioned subject as "the weather" interesting and suggestive.

We take one extract from Mr. Baker's paper because, as the author says, it bears on a subject that has been much debated—namely, the merits and demerits of that fine specimen flower, A. K. Williams:—

"I have," says Mr. Baker, "grown this Rose from its first introduction and have probably now about sixty plants. I have had plants from various nurseries on the Manetti, Briar cutting, and seedling Briar, but the last-named stock I prefer for this Rose. I confess, on two occasions—the autumn of 1831, and again of the same season of 1882—I was most unfortunate with the plants I then received. They all died, although to outward appearance strong and vigorous, yet, on closer examination, proved to have suffered severely from the effects of frost, before they came into my possession. With this experience, I budded the Rose on some seedling Briars grown in my own garden. They made excellent maidens, and bloomed grandly, and made strong growth, many of 5 feet in length. They have since done wonderfully well as cutbacks, and are now certainly most satisfactory plants. I have also some plants that were budded on the seedling Briar received from Mr. Prince, one year old from the time of budding. These were lifted in October, pruned and potted at that time, and kept with some others in a cold frame during the winter, and indeed, until about the middle of May following, when they were planted out. I have all these plants now. Every one turned out well, and have given me, this summer, the choicest blooms.

"I have bought from nurserymen several plants, nearly all of which have grown favourably and bloomed with great luxuriance, making growth 4 to 5 feet in length. Although I cannot say that I consider it exactly a hardy Rose, I am sure it may be easily and successfully cultivated, and, with the care usually bestowed on moderately strong Roses, will afford satisfactory results. As a specimen of the true and perfectly imbricated type of flowers, and the splendour of its colour, it should be freely shown in every garden; but, in my judgment, it is constitutionally stronger on the seedling Briar than on any other stock. In the *Journal of Horticulture*, some rosarian friend has advised this being moved and planted in the autumn, after being budded in the summer. I have not made any such experiment; but with other Roses that I have so tried the check received so soon after budding occasioned a most lamentable failure."

We commend this very neat, useful, and entertaining work to all who are interested in the cultivation of the Rose whether for exhibition purposes or garden adornment.

INSECTIVOROUS PLANTS.

ONE of the great distinctions between plants and animals which was formerly held was that plants lived on inorganic, while animals lived on organic food. That distinction, however, breaks down in various ways; for instance, the very large group of plants known as fungi live exclusively upon organic matter. It was also said that animals were capable of consuming solid food, while plants were not; this is also incorrect. Animals take solid food into the mouth and stomach, but before it can be assimilated it must first become liquid. Insectivorous plants have the power of taking solid food into a structure which we are justified in calling a stomach. The principal families in which there are plants possessing this remarkable power are the *Nepenthaceæ*, *Sarraceniaceæ*, *Dioscoreaceæ*, and *Utricularias*.

THE NEPENTHES OR PITCHER-PLANT FAMILY.

This consists of over thirty species, besides an increasing number of hybrids. They are half-shrubby climbing plants, natives of the hotter parts of the Asiatic Archipelago, from Borneo, which is their headquarters, to Ceylon, with a few outlying species in New Caledonia, in tropical Australia, and in the Seychelle Islands. The pitcher of *Nepenthes*, which is its most striking feature, is an appendage of the leaf, developed at its apex, and is furnished with a stalk, often a very long one. This stalk, in the case of pitchers formed high up on the stem, has, before full development, the power of twisting like a tendril round neighbouring objects; and thus the plant climbs sometimes to a great height in the forests. In some species the pitchers are of two forms, one appertaining to the young, the other to the old state of the plant; the transition being gradual from the one to the other. Those of the young condition are shorter and more inflated than in the old, where they are long and funnel-shaped. In all cases the mouth of the pitcher is furnished with a

thickened corrugated rim, which serves three purposes—first, it strengthens the mouth and keeps it distended; second, it secretes honey; and third, it forms a row of incurved teeth, which descend into the pitcher and prevent the escape of insects. In some species this row of teeth is strong enough to retain small birds should they thrust their body beyond a certain length when in search of insects; even rats are said to have been found captured in some of the larger and more voracious *Nepenthes* urns. Under the microscope, the minute structure of a *Nepenthes* pitcher is both beautiful and interesting. In the interior of the pitcher there are three principal surfaces—viz., an attractive, a conductive, and a secretive or digestive surface. The attractive surface is on the under side of the lid of the pitcher, and also on the rim. The under side of the lid is provided with an abundance of honey-secreting glands. This is the bait, which is cunningly provided, so that the victim may be led pleasantly on its way to destruction. It is found in all the species but one—viz., *Nepenthes ampullaria*. Sir Joseph Hooker, in his presidential address "On Carnivorous Plants" to the British Association at Belfast in 1874, points out very clearly the reason why this species is thus exceptional. Unlike the others, its lid is thrown horizontally back, and therefore honey secretion on a lid so placed would tend to lure insects away from the pitcher instead of into it.

The glands consist of masses of cells, each embedded in a cavity of the tissue of the lid, and encircled by a guard-ring of glass-like cellular tissue. The conducting surface extends from the mouth of the pitcher down to a variable distance; it is formed of a fine network of cells, covered with a glass-like cuticle, which affords no foothold to insects. The remainder of the pitcher is entirely secretive, and consists of a cellular floor crowded with circular glands in very large numbers. Each gland is like the honey-gland of the lid, and is contained in a pocket of the same nature, but semicircular, with the mouth downwards, so that the secreted fluid all falls to the bottom of the pitcher. The secreting glands are so numerous that Hooker counted 3000 to a square inch in *Nepenthes Rafflesiana*. These secrete an acid fluid, which is present in considerable quantity before the lid of the pitcher is opened. Animal matter put into the pitchers, such as small pieces of meat or white of egg, becomes acted upon in a short time. Not long since I had occasion to cut off a pitcher of *Nepenthes Rafflesiana*, which contained over twenty large cockroaches. *Cephalotus foliolaris*, one of the prettiest and most interesting of plants, is worthy of notice. It has been called the Australian Pitcher-plant, and affords a good illustration of the confusion which now and again arises by the exclusive use of English plant-names. There is one species of *Nepenthes*, a native of Australia—viz., *Nepenthes Kennedyana*—this plant, and not *Cephalotus*, which belongs to the Saxifrage family, has therefore the best right to the name of the Australian Pitcher-plant. By using the scientific name no confusion can possibly occur. This plant, then, unlike *Nepenthes*, attains only a few inches in height, has two distinct forms of leaves, one flat, like an ordinary leaf, the other having pitcher leaves. No doubt it also, in a natural state, captures and digests insects.

THE SARRACENIACEÆ, OR AMERICAN PITCHER-PLANTS,

consist of six species of *Sarracenia*, nearly all of which have several varieties, and a large number of home-raised hybrids, besides one species of *Darlingtonia* and one species of *Heliamphora*. Except the last-named they are all in cultivation, are similar in habit, and are natives of North America, where they are found growing in bogs, and even in places covered with shallow water. Their leaves are radical, pitcher-shaped, and collected into tufts. At the flowering season they send up numerous stems, bearing each a solitary flower, the structure of which is quite as remarkable as that of the leaf. The singular aspect of the flower is due to a great extent to the umbrella-like expansion in which the style terminates. This is five-lobed, the stigmatic surface being situated at the deflexed point of each lobe. The shape of the style, or perhaps the appearance of the whole flower, caused the first English settlers in their native place to give the plant the name, now also used, of "Side-saddle Flower." Both in flower and leaf the *Sarracenia*s are totally distinct from every other vegetable form. *Sarracenia purpurea* has been known in this country for nearly three centuries in quaint old Gerard's "Herball," a characteristic figure is given, and he says that he copied the figure, "for the strangeness thereof, and hopes that some or other who travel into foreign parts may find this elegant plant and know it by this small expression, and bring it home with them, that so we may come to a perfecter knowledge thereof." Since Gerard's time up till 1829 all the known species have been introduced; but within the last ten or twelve years the number of forms in cultivation have been more than doubled, not by those who travel into foreign parts, but by hybridists. So distinct are some of those hybrids that had their origin not been well known they might have passed as true species.

*Sarracenia*s may be divided into two sections—those having the mouths of their pitcher-shaped leaves open in consequence of the lids standing erect, thus allowing rain to enter freely, as in *Sarracenia Drummondii*, *S. flava*, *S. rubra*, and *S. purpurea*; and those having the lids projecting over the mouths of the pitchers, entirely preventing rain falling into them, as in *S. variolaris*, and *S. psittacina*. The structure of *Sarracenia* is somewhat similar to that of *Nepenthes*. The *modus operandi* by which insects are "caught and done for" is also similar. The under surface of the lid is baited with a honey secretion forming the attractive surface, but there is also a honeyed pathway from the bottom of the leaf leading up to this larger feeding ground, to which ants and other creatures are enticed. Immediately below the portion covered by the bait is a smooth part formed of glassy cells, overlapping like the tiles of a house, termed the conducting surface. Below this again, extending a short distance down

the tube, is a portion covered with very short hairs pointing downwards termed the glandular surface; and the remaining portion extending to the bottom of the tube, which is lined with longer hairs, also pointing downwards, is termed the detentive surface. The falling of the insect is due to the slippery nature of the conducting surface, where the fly cannot take a hold sufficiently strong to support itself, but tumbles to the bottom of the well, from whence it is unable to crawl up. The fine sharp-pointed bristles, pointing directly downwards, prove a most effectual barrier to its ascent.

An ingenious American has observed that flies which sip honey secretion of *Sarracenia* become intoxicated, and in that condition fall down and are drowned. There may be some truth in the statement. I tried to get hold of a perfectly sober fly, and taking a member of the "blue-bottle" army, placed him in the tube of a *Sarracenia* pitcher, without allowing him to touch a single drop of the nectar, and he could no more crawl out of the pitcher than the most dissipated of his American brethren. It is astonishing what a large number of flies, wasps, and other insects a few plants of *Sarracenia* will capture in a season. Their leaves are usually packed to half the length with insect remains, which must be far in excess of the wants of the plant. The liquid contained in their pitchers is not distinctly acid, and does not show digestive properties very markedly; but it is very wet, wetter than water. If a fly falls into water it may get out, but if it falls into glycerine or into *Sarracenia* liquid it gets wet all over and dies of asphyxia. The liquid product of decomposition is probably taken up by the leaves. *Darlingtonia californica* is a most remarkable member of this family. It is found on the Sierra Nevada of California. The pitchers differ from *Sarracenia* in being twisted and in widening as they reach the apex, which forms a hood. This appendage appears as if perforated at the upper part, and terminates in two fish-tail-like prolongations, which give it a most curious appearance. The *Heliamphora nutans*, a native of Venezuela, differs from the others in having several flowers on a scape which are destitute of corolla. But as this plant is not yet in cultivation, we can only express a hope, as old Gerard did so long ago regarding *Sarracenia purpurea*, "that those who travel into foreign parts may bring it home with them, that so we may come to a perfecter knowledge thereof."—ROBERT LINDSAY, *Curator Royal Botanic Garden, Edinburgh* (in *Forestry*).

[Since the above was written this interesting plant has been introduced into cultivation by Messrs. Veitch of Chelsea.]

MELVILLE CASTLE GARDENS—MIDLOTHIAN.

MELVILLE GARDENS possess some features of interest, and in one important respect Melville is more than interesting—it is wonderful, and that is in regard to the keeping of the grounds, considering the strength at command. Everything is carried out with thoroughness and sound judgment, and there is an air of cleanliness to which many private gardens are strangers. The mansion is beautifully situated, and commands extensive, diversified, and picturesque views. But it is with the gardens we are most concerned, and we will therefore take a brief glance at each department. The kitchen garden, about four acres in extent, and enclosed within lofty walls, which are covered from base to summit with healthy fruit trees. Similarly fine are the pyramids and standards in the kitchen garden, considering the nature of the soil, which is very light and sandy, resting on gravelly subsoil. Such soil requires much moisture to bring fruit and vegetables to perfection. During the past season fruit trees and a great number of herbaceous plants have suffered severely. But, considering all these imperfections, finer, cleaner, and more fruitful examples could not be seen. The herbaceous border is about 400 feet long and 14 or 15 feet wide, containing the best varieties of Delphiniums, Phloxes, Pyrethrums, and about a hundred varieties of single and double Daffodils. It also contains numberless varieties of other herbaceous plants.

The glass range is in eight divisions, separated by two entrances into the kitchen garden, and for strength, lightness, and durability it could not be surpassed. Entering the west door we pass into the latest vinery, which is about 100 feet long, chiefly filled with Alicantes and Lady Downe's, which at the time of my visit had splendid bunches from base to summit, some probably weighing from 8 to 9 lbs. Next is the Black Hamburg house, where this unsurpassed old Grape is grown in grand condition. The next is the Muscat house, which is entirely renewed and planted principally with Muscat of Alexandria, which have had a good crop. Attached to this house is the conservatory, which is the centre of the range. The principal plants here are Camellias and Palms, the former planted in a border especially prepared for them, and the remarkable richness of their deep green foliage fully indicates that they have everything suitable to their requirements. In this house also are two or three other fine specimen greenhouse plants, particularly *Yucca aloifolia* and a *Dasylium*. Both are about 6 feet high, well furnished with foliage. The side stages are occupied with good assortments of Pelargoniums, Fuchsias, Statives, &c., and these in their time shall have many admirers. The roof is regularly covered with climbers, such as *Tacsonia Van Volxemii*, *Clanthus puniceus*, *Habrothamnus elegans*, *Cantua dependens*, and Fuchsias.—The latter make unsurpassable climbers when properly grown, because its long pendent blooms are seen to the best advantage. The early vinery is chiefly devoted to Black Hamburgs, with the exception of Foster's Seedling and Gros Colman—one rod of each. All have had a heavy crop of good-sized bunches, the berries large and finished well. In the early Peach house the trees have had heavy crops of good-sized beautifully coloured fruit, the trees always taking the leading prizes at northern shows. On the other side of the entrance are two Peach houses, each about 50 feet long, the trees in splendid condition.

Then we turn to the plant houses, commencing with the stove, which contains a good collection of Orchids in best of health. On the centre stage *Pandanus Veitchii*, Palms, &c., associated with dark-foliage *Dracenas*, are shown to great advantage. A very fine plant of *Clerodendron Balfourianum* is planted out in the border, and trained on the roof. It is annually cut

down, and otherwise well attended to, the result being an abundance of bloom for three or four months in the season. In the fernery the most interesting plants are *Davallia Mooreana*, *D. bullata*, *D. insignis*, *Microlepia hirta cristata*, *Leucostegia immersa*, and *Adiantum Williamsii*. The former is about 6 feet in diameter, and height accordingly, all in the best of health, but of little less dimension than the former. I may state that four of these took the first prize at the city show last spring. In the heathery and greenhouse are also to be seen the result of high cultivation and attention. Great cultural skill and artistic taste are manifest throughout the whole garden, the flower garden being a great feature in the summer, particularly the carpet bedding and the ribbon border, which is about 400 feet long, and this year contained thirteen lines of distinct colours.—QUILL PEN.

CLIMBERS AND SHRUBS FOR WALLS.

DURING the last half-dozen years the test to which wall shrubs and climbers have been subjected in the open air has been very great, and for all ordinary garden purposes may be considered conclusive, at least so far as their hardiness in this country is concerned. In connection with this subject in localities where the cold is greater than the plants can endure, the question of material for their protection has always been a troublesome one, and indeed this is said to be one of the principal objections put forward against the cultivation of these wall climbers. To the gentleman or gardener who is accustomed to everything being kept neat and trim the material in general use for protecting plants is always objectionable. Of course this can only be applied to the more primitive mode of covering, in which worn-out mats, canvas bags, and straw were employed without any system, and often with uncertain knowledge of how much was required to ward off frost. Where neatness is of the first importance this objection is not without weight, for what is more displeasing in a walk through a trim garden than to be met at every turn with the ragged ends of mats and straw litter? But why use plants that are only half-hardy at all? There are many more plants than would stock a large garden perfectly hardy requiring no covering or protection whatever.

Where the cultivator is of a speculative turn it may often be desirable to test new introductions or plants that have not hitherto been grown in the garden in question; but this may be done in special corners, and coverings of Yew or Fir branches substituted, as they are just as effectual and harmonise much better with the surroundings, gradually every year thinning them as the plants become established, or as they prove to be able to stand more cold than was at first expected. Instances of how plants have been treated on their introduction may be cited. In the case of *Jasminum nudiflorum*, which on its first appearance was grown in the greenhouse until more venturesome cultivators succeeded in establishing it against a wall. *Choisya ternata* in the north is yet grown in the intermediate house or greenhouse, and in the south considered hardy, and is grown as a wall bush or as a standard in the open ground, where it seems quite at home, and where its sweet Hawthorn-scented blossoms are produced as freely as need be. Many more could be given, but my object at present is to draw up a list as varied as possible, and all capable of standing unprotected the cold of an average winter in the neighbourhood of London.

North Wall.—*Rhynchospermum pulchrum*, *Rubus deliciosus*, *Cassia fulvida*, *Rosa anemonæflora*, &c., *Duvaia spinescens*, *Forsythia suspensa*, *Choisya ternata*, *Olearia Haastii*, *Jasminum officinale*, *Camellia japonica*, *Ribes speciosa*, *Ceanothus* in variety, and *Rubus spectabilis*.

South Wall.—*Fuchsias* in variety, *Convolvulus Cneorum*, *Clematis montana*, *Rosa Banksia* and *bracteata*, *Tecoma grandiflora*, *Mutisia decurrens*, *Eccremocarpus scaber* in the south, *Magnolia Gordonii*, *Periploca græca*, *Clematis coccinea*, *Coronilla glauca*, *Embothrium coccineum*, and *Hydrangea altissima*.

East Wall.—*Rosa sericea*, *Clematis orientalis*, &c., *Parrotia persica*, *Decumaria barbara*, *Viburnum cotinifolium*, *Photinia serrulata*, *Akebia quinata*, *Clematis Pitcheri*, *Fabiana imbricata*, *Cassia corymbosa*, *Rosa Fortunei*, *Exochorda grandiflora*, *Indigofera Gerardiana*, and *Abelia rupestris*.

West Wall.—*Chimonanthus fragrans*, *Jasminum nudiflorum*, *Rubus australis*, *Prunus triloba*, *Rhus radicans*, *Stauntonia hexaphylla*, *Solea virginica*, *Fallugia paradoxa*, *Vella pseudo-Cytisus*, *Ceratonia Siliqua*, *Smilax tannoides*, *Viburnum dentatum*, *Bridgesia spicata*, and *Escallonia rubra*.—M.

GOOD OLD FLORISTS' FLOWERS.

I READ the communication at page 49 from Mr. Thomas Garratt with great pleasure. His deep-seated love for Carnations and Picotees has been renewed with intensity, and he hopes next season to be a victorious competitor. The young and the old meet together in friendly rivalry at these meetings, and such old and tried veterans as Mr. Garratt are ever welcomed with the respect justly due to their years and ripe experience. Mr. Garratt asks—"Have the old varieties been surpassed?" alluding to Cartwright's Rainbow, Flora's Garland, &c. It would be presumption in me to give my own opinion on this subject, but Mr. Turner has no doubt that the improvement since the youthful days of Mr. Garratt has been progressive, sometimes slowly, at other times rapid. Even if the flowers that stimulated Mr. Garratt's youthful ardour were equal to recent productions what avails it if they cannot be obtained?

The youthful vigour of Carnations and Picotees cannot be maintained into old age. I will select from the list of the old varieties Flora's Garland to illustrate my meaning. I think it is the best variety named at page 49. As a seedling plant it was a vigorous kind, for in respect of constitution

they vary as much as the human family. This vigour was maintained for some years, and although it retained its stamina longer than any of the others, owing, no doubt, to its more vigorous habit, it ultimately declined, and although I kept it up to a few years ago for the sake of "Auld lang syne," it is now, I believe, as extinct as the Dodo. But we do not need Flora's Garland; and although the old growers may long to see the charming flowers that stimulated their youthful exertions, they must accept the inevitable, and learn to admire the productions of more recent times. James Merryweather, John Keet, Sybil, Tim Bobbin, Jessica, and Rob Roy are all superior rose flakes to Flora's Garland. Cartwright's Rainbow has been surpassed by William Skirving, Master Fred, Harrison Weir, Rifleman, and Shirley Hibberd. I never knew the scarlet bizarre Martin's Splendid, but Admiral Curzon, Arthur Medhurst, Robert Lord, and Hextall's Mars may well compensate us for its inevitable loss. The gradual loss of stamina or degeneration of seedling forms of the Carnation and Picotee may well furnish material for reflection, and he admitted as a theme for profitable discussion. The influence which the flowers exercise over the vigour of the plants is in its way very mysterious. This is seen in what florists term "run" flowers, or such as sport to the self form. Leaf and flower work together to produce certain results. I will take scarlet bizarre Carnation Admiral Curzon, the first on all lists. When the flowers are in their perfect state of bizarre the plant is sure to be weakly, with pale foliage. If a branch sports to a condition in which the white is absorbed by the scarlet and maroon the production of that branch will be plants with darker foliage and a more vigorous habit; but, on the other hand, if the white and scarlet both disappear, leaving a maroon self only, we have a strong vigorous plant with rich dark leaves distinct in all respects from the plant in its perfect scarlet bizarre state. Sometimes our sportive Admiral will take the form of a scarlet flake, but in this state it is not a vigorous plant. The well-known scarlet flake Sportsman (Hedderley) is merely a sport from Eason's fine scarlet bizarre Admiral Curzon. It has sported in other hands, but Hedderley being the first he claims to have his name added to it, as if it had been his own seedling production. I attribute the gradual decline in vigour of choice varieties of the Carnation and Picotee to two causes. The principal one is that the flowers of the best quality have not such vigorous constitutions as selfs. The plants are not selected for their vigorous constitution, but for the quality of the flowers they produce. The old Clove does not decline in vigour; its constitution is much the same as it was fifty years ago.

The second cause is to be traced to an over-anxiety to produce large blooms for exhibition; for this reason the plants are over-fed, stimulated by rich composts until they get into an unhealthy condition. In its wild state the Carnation does not grow in rich meadows, but clings for support to old ruins or dry banks, where the soil is neither rich nor moist. I use for potting good yellow loam, leaf mould, and sand, with some decayed stable manure as the best fertiliser. There should be no dividing mark between border and show Carnations. All the varieties will grow out of doors and flower well even in the precincts of smoky towns. Witness the grand display annually made in Messrs. Veitch's nursery, King's Road, Chelsea, and other populous neighbourhoods.—J. DOUGLAS.



KITCHEN GARDEN.

ASPARAGUS.—A few dozen good roots should be lifted and placed into the bed of the Cucumber house to force. They grow freely now, and will pay amply for forcing. Roots from four to six years old are very profitable, but young ones only partially developed are not. Asparagus plantations should be attended to at once. Put a forkful or two of good manure around each crown; shake a small handful of salt over this, and then fork it slightly in over the roots; but remember this, without breaking any of them. When each plant has been treated in this way spread more manure between the rows on the vacant ground, and fork it in. In heavy soil a quantity of river sand may be forked in with the manure which is put close to the roots. A dry light rich soil is best for Asparagus.

PEAS.—When the weather is mild and the soil moderately dry a few rows of the earliest sorts of these may be sown on a sunny border. We all know that Peas sown in November germinate freely, and those put in now will do the same, although they will not be so early as the plants from seeds we advised to be sown under protection a fortnight ago. It is quite a mistake, however, to wait for the days lengthening or warming before sowing Peas, as they are perfectly hardy and will remain fresh and healthy through all weathers. Those sown in the autumn and which are now a few inches in height should be earthed up and staked, putting the sticks in moderately close to afford shelter, but not sufficient to draw them up or make them tender.

BROAD BEANS.—A few rows of these may be sown. Make open drills 4 feet apart and 3 inches deep, and sow the seed thinly in these. Strong rich soil is the only kind in which a profitable crop can be secured, but a lighter soil will suit them better now than later. Early Mazagan is

small in the pod, but very early. Early Longpod is one of the best for present sowing. The large-podded Leviathan is not recommended for sowing thus early.

SAND FOR SEEDS.—Throughout the coldest of the spring months many seeds do not germinate freely in wet soils, and it is a great advantage to assist them as much as possible. One of the best ways of doing this we have tried is to have in a quantity of sea or river sand, and as the seeds are sown they are covered to the depth of 1 inch. It is almost impossible for them to perish under this covering, and free germination is the rule. Leaf soil is also good for this purpose, and a general mixture of old potting soil is useful. With material of this kind to work with no one need be afraid of sowing early seeds in the coldest districts.

HOTBEDS.—Wherever quantities of fermenting material can be secured make up plenty of these, plant them with early Potatoes, and sow Carrots, Radishes, &c. It is not too early now to go on with this work, as vegetables are always valued in spring.

CAULIFLOWER.—Veitch's Extra Early Forcing should be sown in a small quantity in a box under glass, to supply young plants for turning out in March and cutting in May. Sow a pinch of Webb's Early Emperor Cabbage seed at the same time, and also a little of the Early Paris Market Lettuce.

LIME.—Where the quarters are very old and full of worms and grubs, or the soil has become rather inactive, a dressing of lime will improve it wonderfully. Gas lime is often recommended for vegetable quarters, and it is very good for destroying vermin, but it is not a good substitute for hot lime as a soil reviver. We have this carted from the kiln and emptied over the quarters, a little soil is then thrown over it, and in a day or two it swells and bursts, being then spread and dug or forked in. We never employ more than two tons to the acre, and we fork or dig it into the soil about this time, as it has then time to be toned down by sowing or planting time.

CABBAGE.—So far our autumn-sown plants have had a good time, and they have done well. They promise to be unusually early, and we are just now giving them a little attention. This consists in drawing the soil on each side of the rows very close and firmly up to the necks of the plants to keep them firm and encourage them to throw out more roots.

Old vegetables of every description should be cleared off without delay, and get every square foot of soil dug over and prepared for the reception of spring crops. Where there are any earth closets add soil liberally, and dried or old Mushroom bed manure may be put in too, as there is no manure to equal this for the growth of Celery.

MUSHROOMS.—Make up fresh beds for spring-bearing. If there is not space in the Mushroom house, try one or two in a shed. Beds which show signs of ceasing to bear should be well soaked with water heated to 90°.

FRUIT FORCING.

MELONS.—If the seed was sown as advised the plants will now have their first rough leaves, with which there will be a corresponding increase of root-action, necessitating a shift from 3-inch into 5-inch pots, plunging again in a bottom heat of 75° to 80° and near the glass, as it is very important they be kept sturdy and short-jointed. A small stick may be placed to each plant, to which the growth is to be secured, which supports will be necessary until the plants are large enough for transferring to the ridge or hillock in the Melon house; but those plants which are intended to be placed in pits or frames may be transferred to their permanent quarters at once, or as soon as the beds are ready, and they should be stopped at the third rough leaf. The best soil for the Melon is strong turfy loam; the top 3 inches of a pasture taken off with its turf and laid up for about three months in summer, or six in winter, is a capital material, and will produce first-rate Melons without any admixture; it should be chopped up into pieces about 2 inches square. If the plants are to be grown in pits heated by hot water the walls must be thoroughly limewashed, the woodwork washed with soap and water, and the glass thoroughly cleaned both inside and out. Make a hillock in the centre of each light, about a barrowful being sufficient, and leave a space of about 12 inches from the glass, not more, the depth of soil being 10 inches to a foot. The soil having been in the pit two or three days, turn out a plant in the centre of each hillock, and in planting press the soil firmly around them, being careful not to injure the stems. The plants should be moderately moist at the roots, so as to obviate the necessity for watering, and as a safeguard against slugs and damp draw a circle of quicklime and dry soot around each plant. The temperature by day should range from 70° to 75°, allowing an advance of 10° from sun heat, and maintain the night temperature at 65° to 70°. Prepare more fermenting materials for linings and fresh beds, and sow more seeds for raising plants to put out in succession beds.

CUCUMBERS.—*Young Plants.*—Shift these into larger pots as they require more root room, put a stick to each plant intended for trellises, and keep them near the glass so as to ensure a sturdy growth. Those intended for planting in pits and frames should be stopped at the third rough leaf, and these may be planted out as soon as the beds are ready, a hillock being formed in the centre of each light, and a plant turned out in each. Good turfy loam is the best compost, and should be somewhat lighter than for Melons, adding about a twentieth of charcoal. The plants require similar treatment to Melons as regards bottom heat, whether obtained by fermenting material or hot water.

Winter Fruiters.—Plants which have been producing fruit all the winter will now require the surface soil of the bed removed, supplying an admixture of three parts of light turfy loam and one of

short manure, which will have an invigorating influence. When the plants have roots working freely in the fresh material they will show it by a corresponding amount of growth, of which advantage should be taken to cut out some of the old exhausted growths and train young in their place, but this must be done gradually so as not to give the plants a check. See that the young growths are tied up to the trellis, but so loosely as to allow of their enlarging, as when too tight it is highly injurious. Avoid overcrowding the shoots, allowing space for the admission of light and air, and guard against overcropping. Be careful not to give too much water, but whenever the necessity for it arises afford a thorough supply in a tepid state, or, if the plants need a stimulant, afford liquid manure, also in a tepid state and weak.

VINES.—*Early Forced Houses.*—Cold dull weather is not favourable to forcing operations, yet the Vines have progressed satisfactorily, especially in houses where there is plenty of piping and a good supply of fermenting materials, which can be turned over daily for the purpose of counteracting the drying influence of constant fire heat. Proceed with the stopping and tying-in of young growths, laying in as much as will afford the foundation of an even spread of foliage over every part of the trellis; but care must be taken not to overcrowd it, especially as regards the principal foliage, which must have full exposure to light and air. When in bloom maintain a night temperature of 65° to 70°, and 70° to 75° by day artificially, and 10° to 15° rise from sun heat. Select the most compact bunches for the crop, and remove all those not required. Thin as soon as the setting is effected—the earlier the better after the properly fertilised berries can be distinguished. If the inside borders have not been watered since the Vines were started they should have a good supply at 80° to 85° as soon as the flowering is over. The outside borders should have attention, and if fermenting materials are used a temperature of 80° must be maintained by means of turning and additions as necessary.

Successional Forced Houses.—Vines started in December and fire heat applied about the middle of that month are breaking strongly, and should be syringed two or three times a day, for the last time sufficiently early to allow the rods to become fairly dry before nightfall; and if fermenting materials have been placed in the house, which is a capital plan, they should be turned over frequently to liberate ammonia and moisture. Discontinue the syringing when the bunches become prominent, and proceed with disbudding as soon as the best shows can be ascertained, doing it, however, gradually. A good moisture must be maintained by damping the paths and walls until the flowers open, when a free circulation of rather dry air with a little more heat will facilitate the setting. The night temperature should range from 60° to 65°, or a few degrees less on cold nights, with 65° to 70° on cold dull days, and 10° to 15° rise from sun heat, commencing to ventilate from 70°, and close early, so as to enclose as much heat as possible, and when in flower 5° more will be necessary all round.

Fruiting Vines in Pots.—Look well to these, thin early, and guard against overcropping. Allow as much lateral extension as there is space for the exposure of the foliage to light and air. If the pots have the benefit of a fermenting bed turn it, but do not injure any roots that extend from the pots into it, maintaining the heat about the pots at 75°. Supply liquid manure a few degrees warmer than the house, and add a little top-dressing of rich material, previously warmed, as soon as the roots appear on the surface.

Vines in Pots for Next Year's Fruiting.—Cut-backs are best, especially for early work, and should be taken into heat for starting. When they have made 2 or 3 inches of growth shake them out and repot in a rich rough loam with a sprinkling of bonemeal, using pots 6 to 9 inches in diameter, plunging in mild bottom heat, 75° to 80° at the base of the pots, and keep them near the glass.

Late Grapes.—Examine fruit in the Grape room, scrutinising closely for decayed berries, dispensing with fire heat as much as possible by keeping the shutters closed in dull damp weather, using fire heat only to keep the temperature at 45°, and ventilate only to expel damp. The bottles should be kept filled as occasion requires with soft water.

PLANT HOUSES.

Loam.—A good supply of loam that has been stacked for some months outside may now be placed under cover in readiness for potting when required. If the loam was in a sufficiently moist state when stacked and care was taken in the stacking to arrange it so as to protect it from heavy rains it should now be in very good condition. The stacks should be longer than wide, and the required quantity can then be cut off one end. It is a great mistake to leave the soil outside until it is wanted, for a period of wet weather might render it unfit for potting purposes. The loam placed under cover should be chopped or pulled to pieces as opportunities present themselves, so that no delay or waste of valuable time will be effected in preparing the soil when it is wanted for use. As much loam as will be required for all early potting should now be under cover, and much time can be saved at potting and seed-sowing time if the fibry portion is now separated and placed in different heaps or bins for use. If the supply of loam stacked in autumn be insufficient for the potting required during the year, another good stack or two should be put together, so that the grass will be thoroughly decayed before it is required for potting. If the loam is too fresh when used it gives much trouble afterwards in removing the grass that grows on the surface of the soil. The loam when stacked should always be placed grass side downwards. Some place layers of manure amongst the loam when stacking, but this for many reasons is not advisable. If the loam is stacked by itself it can be used for any purpose, which is not the case when manure is mixed with it.

Peat.—The stock of peat which is indispensable where choice plants

are grown must be examined, and if there be any deficiency for the potting that will require attention this year some should be procured at once. It is a good plan to stack outside in autumn, before it becomes saturated by rain, as much as may be required for the following year. Peat is much more liable to become wet than loam, however carefully it may be stacked, but it can be preserved in the best condition by using shutters made of wood. If stored under cover that is sufficient for the whole season; it is liable to become so dry that it is rendered totally unfit for use. A good stock should now be under cover and prepared the same as the loam for potting. The peat for Orchids must be lighter than that for hardwooded plants. That prepared for the former may have all the particles shaken out and stored by itself; the small should not be thrown away, but kept for potting small Ferns, Mosses, and other purposes where fine peat will do equally as well as that containing fibre. That for hardwooded plants may, if good, be used as broken up.

Manure.—For plants in pots manure is essential, and cow or sheep manure for all practicable purposes is decidedly the best. If perfectly fresh when obtained it should be stored for at least twelve months. Our supply is generally obtained from the cattle market, and is a mixture of both, and often in a very wet state when received. What is now being placed under cover was stacked last spring, and is now in good condition, only a little too wet. It is prepared in a proper state of moisture by spreading it thinly in the boiler house, and constantly turned until it can be rubbed through a sieve. Care must be taken that it is not dried too much, or it will bake hard and thus give some trouble in passing it through a sieve. When in the proper condition for moisture it is stored in a cool shed ready for immediate use. This is passed through a fine sieve when required for mixing with any compost for potting. It may also be mentioned that quarter-inch bones and bonemeal, which is the best for potting purposes, should also be obtained in readiness, as well as the necessary supply of artificial manures.

Leaf Mould.—This is very useful, and is employed largely in all composts for softwooded plants. When in a half-decomposed state it is in the best condition for plant-growing. Gather that which has not been stacked in heaps, but was laid upon the ground thinly where leaves may have been wheeled, or in the woods where they have drifted into heaps. When stored for use it should be divided into three sizes. The smallest size must be passed through a fine sieve, in which condition it is most suitable for seeds and cuttings. The next size may be passed through a half-inch sieve, and the remainder as gathered.

Sand and Charcoal.—Plenty of sand should always be stored under cover in readiness for mixing with composts, and for propagating purposes. Charcoal is invaluable where Orchids and other plants are grown, and in addition to having a good supply on hand it may be sorted and broken into different sizes ready for use.

Sphagnum Moss.—A good supply may now be obtained from those who gather it for sale. It should be picked in readiness, removing all grass, leaves, and rubbish. The worst may be reserved for placing over crocks when potting, the next for chopping for Orchid-potting, and the best or green ends should be kept by themselves for top-dressing. This, after being sorted, should be kept in a damp place until required for use. I do not like scalding it to destroy insects, but it is really necessary with that used for chopping; the remainder for top-dressing is before use placed for some time in a heated structure, and examined at night, when many slugs are frequently removed.

Pots should be washed in readiness for use, and if there be any deficiency of sizes for various purposes they should be obtained without delay. Crocks for drainage may also be washed and passed afterwards through sieves of different sizes. When the crocks are prepared in different sizes, which should always be the case, the pots are not only drained better but much more quickly when required, and this is of importance when the work requiring attention is pressing in every department.

THE FLOWER GARDEN AND PLEASURE GROUND.

Hotbeds for Propagating Purposes.—The material for hotbeds ought now to be prepared; what it shall consist of must depend upon circumstances. We prefer a mixture of stable manure and good Oak and other leaves, which, if well prepared, generates a moist, sweet, and fairly brisk heat, and which is particularly good for striking cuttings of such plants as Verbenas, Heliotropes, Ageratums, and Iresines, and also for the germination of the fine seed of tuberous-rooted Begonias, Lobelias, Pentstemons, Petunias, and the slow-germinating Verbena and other seeds. Where no leaves are procurable stable manure has to be principally relied upon; but in this case more care must be exercised in its preparation, or much harm may be done by overheating. Cowyard manure is generally slow in heating, very hot and very moist when it is in working order, and we should prefer to mix it with horse manure. Spent tan, where it can be procured, is a good substitute for manure, but is only available for brick pits. If leaves and manure in equal quantities are employed, they may be well mixed and thrown into a large heap to ferment, and before the centre has heated dry the heap should be turned inside out, and in about another week will be fit for hotbeds. Stable manure alone requires to be turned twice, and if very rank three times, and always before it has become excessively hot, the aim being to get rid of all impurities without greatly impairing the heating and manurial qualities of the manure. When the manure has been stored in a dry place it is frequently necessary to freely water it as it is turned, for the simple reason that dry litter or manure will give off no heat during the

process of decay. Cowyard manure requires a longer time in preparation, but is usually more sweet than stable manure. The tan may be used as received from the tan-yard, and if lumps of unslaked lime are freely mixed with it this will quickly start fermentation. This little known plan answers surprisingly well, and without it the tan heats very slowly. Where frames only are available for propagating purposes the hotheds, at this time of year, must be formed fully 5 feet high at the back and 4 feet high at the front, or the heat will not long be sufficiently high.

Boxes for Cuttings and Plants.—Boxes are very serviceable both for propagating purposes and also for growing Zonal Pelargoniums and various other bedding plants. Pans or pots are preferable for seed-sowing, but boxes are much the best for striking cuttings and plant-growing, and no time should be lost in renovating all the old ones and making as many new ones as may be required. Ours are made with home-grown Scotch Fir, and in a neighbouring garden Elm is principally used, these being heavier but more durable. It is a mistake to make very large boxes, these requiring two persons to lift them, and are the first to get knocked to pieces. For propagating purposes, our boxes are made 2 feet long, 15 inches wide, and 6 inches deep. This depth admits of a layer of drainage, 2 inches of soil, and a head room of 3 inches for the cuttings, and we are thus enabled to closely cover each box with two squares of glass, and which can be sealed down with strips of paper if necessary. In these boxes we strike Carnations, Tea Roses, and various soft-wooded bedding plants quickly, and with very few failures. For boxing off Zonal Pelargoniums, Heliotropes, Verbenas, Lobelias, Ageratums, Iresines, and other strong-growing bedding plants, the boxes are made of the same length and width as the cutting boxes, but are about 4 inches deep. Having all of a uniform size admits of their being packed or stood closely together, and square seed pans are also preferable to round ones for a similar reason.

Boxing off Zonal Pelargoniums.—Where a little heat can be given the work of boxing and potting off bedding Pelargoniums may be commenced, and this being done early admits of their being hardened off early, thereby making room for the growth of more tender plants. If pots are available for any of them pot off the more delicate bronze, golden, and silver variegated sorts, and let the commoner sorts be placed in boxes, and about 4 inches apart each way. Crocks being scarce, coke broken up rather finely may be substituted, and the fine ashes from the stovehole may be mixed with the soil instead of silver sand; in fact, we rarely use anything but these ashes with the soil for all kinds of common bedding plants. Until the plants are rooting afresh no water need be given, and at no time do we recommend stopping. If it is desirable to increase the stock of any sort or sorts the old plants should be started into active growth in an earlyinery or warm house or pit. Cuttings rarely strike satisfactorily when taken off dormant plants. They, however, should not be taken off the autumn-struck Pelargoniums unless these are extra strong, as they rarely grow away freely after having the best part of their tops removed, and the gain is in numbers only, one strong autumn-struck plant being equal to two inferior ones.

THE BEE-KEEPER.

SEASONABLE HINTS ON BEE MANAGEMENT.

THE present winter so far cannot be said to have been severe—just enough to keep the bees indoors, but not to necessitate a large consumption of food, or so mild as to keep the bees in a constant state of activity, which leads to the same results. Many of our bees have already had a good airing, all seemingly are in good health, and judging from their appearance and past experience all are breeding; but they will remain unmolested, as I have no apprehension as to damp dirty floors or want. The construction of my hives obviates the two former, and as to the latter care was taken in the autumn that there should be none, so that I feel at ease in that there will be no danger on that score for a considerable time to come. Should any person suspect their stock to be in want place over the cluster either a piece of honeycomb or candy, but resort to syrup immediately after the bees have well aired themselves. Thoroughly clean all floors, and if there is any damp they should be well dried. Since the general adoption of perforated zinc floors damp never appears, and by simply drawing out the sliding floor the *débris* can be easily removed, and if carefully examined eggs dropped by the queen will be found, which can be examined. Defective coverings and other unnatural contrivances are alike inimical to the well-being of the bees, and cause many deaths. As bees will not be endangered by any slight disturbance now, every hive should be fully examined externally, and if there is any appearance of a block at the entrance it should be set right. For a month before and a month after the shortest day, if the weather be dull and the temperature below freezing, bees do not leave their hives, but it is different with a rising thermometer, and in bright sunshine bees come out readily, and often great

numbers are lost to the almost entire ruin of the hive. When snow falls now I immediately close the entrance by folding up the bee ladder, and ventilate from beneath, then removing all snow from the roofs and from the front of the hives, removing it to some distance. I lift the snow with a broom while still soft; in that state it comes clean away from the ground, thus the hive and the site being restored to their normal appearances. After dusk the ventilators may be closed and the ladder dropped unless another fall of snow is expected.

Unless hives are provided with similar appliances on no account should they be closed in at any time, but common hives placed upon the floor may be wedged up sufficiently to ventilate, but not to allow the exit of bees. Where that cannot be performed it is better to let them alone, but remove as much of the snow as is practicable in front and around the hives, so that should the bees make a rush they will be able to recognise their hive and find a resting place near it without being lost in the snow. By attending to these little details as above directed, without interfering internally with the hive, is about all that can be done until the early spring flowers appear, then the peameal may be given, and if necessary thoroughly overhaul the hives of coverings on a mild day with bright sunshine. Pools of water near the apiary are liable to drown many bees, these if possible should be drained away.—A LANARKSHIRE BEE-KEEPER.

TO BEGINNERS—MANIPULATION.

IN the first place it should be well understood that a colony of bees should not be examined or manipulated unless for a purpose. The promiscuous opening of hives, pulling out the combs and disturbing the cluster in spring, or the busy worker in warm weather, has worked much harm, and the novice will do far better in his work when his apiary becomes so large that he cannot subject his colonies to a daily overhauling.

Again, colonies should not be examined at all save to perform some actual needed work—such, for instance, as an introduction of a queen, or something of the kind, except in pleasant weather, and when it is warm enough for the bees to fly safely. The beginner who has it all to learn, in the way of practical work in the apiary, may, however, take some particular colony and experiment with that alone by opening and examining it until he gains that confidence and expertness which comes from practice alone, for this is a part of his apprenticeship, but it should be discontinued as soon as he is able to perform the work expertly.

To examine a colony, the first thing to be done is to blow a little smoke in at the entrance, and, by the way, at no other time save when using smoke should one stand in front of his hives, all operations should be performed from the rear. In using smoke there is no necessity of blowing in a large amount, the smallest whiff is just as good as though the bees were suffocated with volumes of it.

After blowing in the smoke the operator proceeds to the rear of the hive, and waits a moment till the bees are filled with honey, then he will proceed to take off the cover of the hive and lay it to one side. The next thing is to remove the covering mat from the frames; this, as well as all motions made around a bee hive, should be done slowly and deliberately. Bees seem to detest any quick motions, and will resent them with a sting, when otherwise they would be as amiable as you please. After removing the mat the centre frames on one side or the other should be crowded together a little to give room to remove the outside frame. As soon as a sufficient space is formed, the outside frame should be carefully taken out, examined for any desired purpose, and then carefully stood up beside the hive, or, what is better, carefully set into an empty hive or a light box made for that especial purpose.

After the first frame is removed all subsequent manipulation comes easy enough, for all there is to be done is to take out the next frame, examine and replace it in the position occupied by the first one, and so on till all the frames are locked over, when the first frame can be set in the place of the last one taken out. In case, by reason of any inequalities or bulges in the face, it does not fit right, these inequalities may be shaved off with a sharp knife, or the frames may be set again in their original position. As the first method is much the easier, the apiarist should take care to see that each comb is interchangeable not only with every other comb in the hive, but with every other comb in the whole apiary. This will be the means of simplifying his work, and making it easier to perform than it otherwise would be. Time is money, and every step taken to save time in an apiary is one in the right direction, and will be well appreciated on a day with the temperature at 100° or more, and fifty colonies to examine before night.

The manipulating of a colony is the simplest work of the apiary, as it is purely mechanical and manual, and can be easily learned by practice. To know when and why to manipulate is a far more serious undertaking, and one that requires a vast amount of experience and study to fully learn, but when learned it comprises the larger portion of what is required to make an expert apiarist.—J. E. POND (in *The American Bee Journal*).

TRADE CATALOGUES RECEIVED.

Vilmorin, Andrieux et Cie, 4, Quai de la Mégisserie, Paris.—*General Catalogue of Seeds, Strawberries, and Bulbs.*

Compagnie Continentale d'Horticulture, Gand, Belgium.—*List of Seeds.*
George Cooling & Son, Broad Street, Bath.—*Catalogue of Vegetable and Flower Seeds.*

John Green, Thorpe, Norwich.—*Catalogue of Plants.*

Hooper & Co., Covent Garden, London.—*Spring Catalogue, 1885.*

James Cocker & Sons, Aberdeen.—*Catalogue of Herbaceous Plants, Trees, and Shrubs.*

William Rumsey, Waltham Cross, N.—*Catalogue of Seeds for Garden and Farm.*

Collins Bros. & Gabriel, 39, Waterloo Road.—*Catalogue of Seeds and Bulbous Plants.*

William Bull, 536, King's Road, Chelsea.—*Seed Catalogue, 1885.*

Thos. W. Edmunds (late John Cattell), Westerham, Kent.—*Catalogue of Vegetable, Flower, and Agricultural Seeds.*

Thomas B. Thomson, 20, High Street, Birmingham.—*Seed Catalogue and Amateurs' Guide.*

W. Piercy, 89, West Road, Forest Hill, London.—*List of Early-flowering Chrysanthemums.*

Smith and Simons, 36 and 38, Howard Street, Enoch Square, Glasgow.—*Cultural Guide for 1885.*

Bruant, Poitiers, Vienne, France.—*Catalogue of New Plants.*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Books (A Learner).—If you require a work giving technical descriptions of Ferns the best is the "Synopsis Filicum," by Hooker and Baker, published by Bogue, price 28s. If a work with general descriptions and culture is required "Select Ferns and Lycopods," by Mr. B. S. Williams, will be suitable; it is published at the Victoria Nursery, Upper Holloway, price 5s., post free 5s. 5d. A useful book on "British Ferns," by Mr. G. W. Johnson, is published at this office, price 3s. 6d., post free 3s. 9d.

Primulas (T. L. B.).—The flowers you have sent are very fine indeed, and indicate superior cultivation. We have blooms fully as large or even larger, but never of greater substance. This applies to the lighter varieties, your red flowers being rather small.

Variety of Cyclamen (J. Hall).—The flowers sent show a multiplication of petals approaching a semi-double condition, and as they are extremely fragrant the variety is well worth preserving. We have seen similar, but not such good examples, the contrast between the deep red throat and the white petals being very pleasing.

Ferns Unhealthy (M. C. B.).—Everything depends on the condition of the plants as to whether they are root-bound or not, and the position they occupy as to whether the air is damp or dry for suggesting a remedy. You do not even say if they are in a window, conservatory, or hothouse. If they are in a dry room where gas is burnt that may have something to do with their condition; but without further information it is impossible for anyone to answer your questions satisfactorily.

Select Camellias (A. B.).—In addition to Imbricata, Alba plena, Valtavaredo, and Lavinia Maggi, the following have very fine imbricated flowers and large:—Mathotiana alba; Il Cigno, white; Giovanni Santarelli, bright red, with large white blotch; Comte Nesselrode, rose, edged with white; Madame Lebois, rose; and Mrs. Cope, white, striped crimson. Another half-dozen grand flowers are:—Storyi, rosy pink; Mathotiana rosea, rose; Duchesse de Berri, white; C. M. Hovey, scarlet-crimson; L. Insurria, rose, slightly marked white; and Montironi vera, white.

Carpet Bedding Plants (G. C. B.).—If you require very close-growing plants the following will perhaps answer your purpose:—Herniaria glabra, dark green; Sedum glaucum, bluish green; Oxalis corniculata rubra, dark velvety brown; Cerastium tomentosum or Antennaria tomentosa, silvery white, the latter very dwarf and rather slow-growing; Mesembryanthemum cordifolium variegatum and Golden Feather, sown late and kept pinched. The Oxalis may be raised from seed. If you write to Mr. Graham, Garden Superintendent, Hampton Court Palace, Kingston-on-Thames, enclosing a stamped directed envelope for a reply, he will send you the price of his little manual on carpet bedding, if it is still in print.

Refuse Fish for Vine Borders (J. C.).—Refuse fish is a powerful fertiliser and may be applied in its fresh state, but it is best thrown into a heap and mixed with six times its bulk of soil, and turned over a few times so as to mix it thoroughly; but it emits such an offensive smell that it would be tolerated in few gardens. Spread on the surface, however, and pointed in with a fork, there is no smell of consequence, as the soil is the best

deodorisers. It may be applied all over the surface to the extent of an inch thick in its fresh or undecomposed state, and if incorporated with loam, as above indicated, 2 or 3 inches thick, as a top-dressing, it is a first-rate dressing for fruit trees, and indeed every description of crop needing support, and, in the proportion of one part to six of soil, is more powerful and enduring than manure.

Camellia Buds Falling. (*A Constant Reader*).—We have examined the shoot of Camellia you sent for our inspection and found the flower buds perfectly healthy, but the wood not sufficiently ripened. There can be little doubt that the falling of the buds is due to the unripened condition of the wood. You cannot expect your tree to unfold its buds and perfect flowers, the wood being so green as the sample supplied to us. The growths when ripe should be of a dark brown colour up to the terminal bud, and unless this is accomplished your tree will continue to cast its flower buds. The unripened condition of the wood may be due to overshadowing, or to some extent to the very luxuriant growth of the tree itself. We would advise you to start this tree into growth somewhat earlier than those of a less luxuriant nature, so as to give it a better chance of maturing its wood earlier in the season, when it will have the benefit of light and sunshine, which are essential for this purpose.

Vines and Plants. (*G. C. B.*).—There is no reason whatever that you should not succeed in your object. As you will not have room for more than five Vines we should have three of them Black Hamburgs, and you might try one Madresfield Court and one Foster's Seedling. In a cool mixed house the others you name are less certain to give satisfaction. If Madresfield Court does well you can easily take up another rod from it, while if it fails by the berries splitting you can cut it out and train an additional row of either the Black Hamburg or Foster's White Seedling in its place, as one Vine will support two rods as well as one only. You had better procure the Vines and shorten them at once to the height required for them to reach the base of the rafters, when planted keeping them quite cool until the buds commence swelling in spring, then plant. Borders 3 feet wide and 2 feet deep will suffice the first year, and they may be composed as described by Mr. Abbey in another column.

Asphalt Walks. (*H. P.*).—The walks on the Thames Embankment Gardens are made of asphalt with a good proportion of gravel in its composition. We do not know the exact proportion of the ingredients. We cite as follows from the "Gardener's Year Book" on preparing and using asphalt:—"1, Take two parts of very dry lime rubbish and one part coal ashes, also very dry, and both sifted fine. In a dry place on a dry day mix them, and leave a hole in the middle of the heap, as bricklayers do when making mortar. Into this pour boiling hot coal tar; mix, and when as stiff as mortar put it down 3 inches thick to form the walk. The ground should be dry and beaten smooth. Sprinkle over it coarse sand: when cold pass a light roller over it, and in a few days the walk will be solid and waterproof. 2, An old gravel path will only require to be swept clean; a new-made one to be well beaten and rolled. Choose a warm day (the warmer the better); let the tar be boiling hot; use the common, long-handled, iron-bound tar brush, and iron kettle, holding about a gallon, for the purpose of taking only so much tar from the hoiler at one time as can be used in about a quarter of an hour, and paint over with a good coat. Let a lad follow with dry sifted sand, throwing over enough to prevent the tar sticking to his feet, and then go over with the roller. Two men tarring will employ a lad to follow with the sand, and another to attend the fire and supply the tar as fast as used. This repeated every three years the surface will become quite hard, and the paths will always be perfectly dry and pleasant to walk upon even in the worst of weather." No doubt if one part of gravel was substituted for a corresponding part of lime rubbish that the composition would be good; and very fine gravel might be used for surfacing instead of sand, rolling it in before the composition is cold. In Finsbury Park a layer about an inch thick of calcined gravel is spread on the tar mixture, and all rolled down together, making firm, smooth, and neat walks.

Cropping a Kitchen Garden. (*A. W.*).—Although we have plenty of ground we follow the double system of cropping, which is very good in some respects, but is not applicable to every description of crop, especially root crops, as Onions, Carrots, Beet, &c.; and Broad Beans are best kept to themselves, although a few dibbled in the rows of Potatoes do no harm, and are serviceable, as they come in before or by the Potatoes are lifted, even if the Potatoes are early kinds. To give you some idea of the system we may state that we never retain any ground for summer Spinach, Lettuce, Radishes, Celery or Cauliflower, Broccoli, and winter Greens. These are what we may term go-between crops, and as examples—Early Peas have a row of Spinach between each two rows of Peas, or Radishes broadcast about a foot wide, and these are off in time for throwing out trenches for early Celery; indeed all the Celery is grown between all the rows of Peas, and we grow about 3000 heads, the Spinach and Radishes being taken before the Celery. Then Lettuces are grown in the alleys of the Onions and other root crops; early Cauliflowers are planted in the alleys of the Asparagus beds, successional crops between the rows of early Potatoes, and the Broccoli, Savoy, Borecole, and other winter Greens are planted between the rows of second early Potatoes. Then the spaces between the rows of Runner Beans are utilised for Dwarf or French Beans, or Vegetable Marrows. There are a few matters that occur to us upon the spur of the moment, and are in reality carried much further—for instance, we were asked to have Mushrooms in summer, and we filled the spaces between the rows of Rhubarb with dry littery manure, taking out the soil a little or sufficient to cover the manure 3 or 4 inches thick, and inserted the spawn in the beds, wrapped in a little dry hay, in the manure about 3 inches deep, and we had more Mushrooms than we knew what to do with from July to frost. It is astonishing what the ground will yield when treated well and skilfully.

Culture of Zygopetalum Mackayi. (*H. K.*).—The following particulars respecting the culture of this plant by two experienced Orchid growers answer all your questions, and should enable you to succeed with the plants. They do not require frequent potting, and a slight rest after the completion of the growth is beneficial, reducing the supply of water, but never attempt to dry them as is practised with some plants. "It is easily grown. Although Brazilian it makes grand growth in a cool airy house during summer. The largest growths we ever saw were made in a cool, moist, airy, and partially

shaded Odontoglossum house. Everyone admired them, but, alas! they did not flower, and one's employer is apt to fancy "nothing but leaves"—no return for cultural expenses. The Mexican-house temperature was next tried: 90° on hot days, no shade, no fire heat at night, when the temperature fell to 45° or 50° very often. So grown the bulbs were smaller, the leaves shorter, and almost yellow rather than green, but the growths were sturdy and vigorous. Some gave two spikes, each spike bearing seven to nine flowers. A compost of fibrous peat, sphagnum, and broken crocks is most suitable, and abundance of water when growing should be the rule." Another cultivator remarks as follows:—"Ours are grown amongst Cattleyas, but it succeeds if managed like an ordinary cool stove plant. It is not particular as to compost, as we have it growing in peat, loam, and a mixture of both. Breaks on plants in all three kinds of compost or soils are producing a couple of spikes each. It is a free-rooting plant and requires plenty of root-space. A strong plant with one or two breaks should have a 9 or 10-inch pot. When the pots are too small for the plants one spike from each break is the rule, and very seldom more than one break is produced from a lead, while under liberal treatment more spikes and breaks are common."

Tuberous Begonias. (*J. W. S.*).—We are well aware that some of the named varieties that produce "grand flowers" are destitute of constitution, and that it is not easy to increase them rapidly, hence the rather high prices that are charged; but there are, nevertheless, plenty of sorts that are both vigorous and good, these giving cultivators the greatest satisfaction. Seedlings usually grow freely, but some of them naturally more strongly than others. We have described both the soil and temperature in which the plants flourish when they are properly attended to in a suitable structure. Your house is no doubt too hot and dry in summer, but what the temperature is now and onwards through the spring you leave us to guess. For raising the seedlings and growing the plants in their early stages we should have a frame or case inside the house; if over hot-water pipes, so much the better, and in this place 6 inches or so of cocoa-nut fibre refuse to be kept moist. With care in watering and ventilating, and maintaining a temperature of 65°, falling to 60°, the plants would grow as freely as Calceolarias in the hands of a good cultivator. When established in small pots and ready for shifting into larger they must be gradually prepared to endure the drier air of the house by increasing the ventilation of the frame more and more till the lights can be withdrawn without the leaves of the plants changing. When stood in the house they will be far better on a layer of cocoa-nut fibre refuse or anything of a moisture-holding nature than on dry open shelves, and if these are of latticework the dry air rising upwards and acting on the under surfaces of the leaves extracts the moisture from them and the plants collapse. Still, if they must be stood on boards, these and the pots must be syringed as often as is required for keeping them damp. The house, too, every part of it—walls, paths, stages, floors, especially under the pipes—must be well syringed twice a day in hot weather, and the floor damped even more frequently for maintaining a genial atmosphere like that during a dull day after a heavy shower in June. We do not like ventilating by throwing open the doors of a house, as this dries the air too much; and if a structure cannot be efficiently ventilated otherwise it is certainly defective. During the summer the plants grow like Rhubarb, with the pots partially plunged in cocoa-nut fibre in pits and frames that receive no heat except from the sun; but a system of very early and gradually increased ventilation is adopted, and good judgment exercised in watering at all times. Is there anything more we can tell you to assist you in your object?

Names of Fruits. (*Cranston & Co.*).—1, Borsdörffer; 2, not known.

Names of Plants. (*W. W. W.*).—*Scolopendrium vulgare* var. *crispum*. (*V. A. P.*).—The *Vanda Cathcarti* is a fine variety, and appears distinct from the one referred to. The *Odontoglossum Alexandræ* is large, but we have seen better formed flowers, *Zygopetalum intermedium* is an excellent variety superior to most forms, but we cannot say whether it is the original form described. The other Orchid we consider is a variation of *Trichopilia tortilis*, with which it corresponds in colour and form, except that the sepals and petals are become flattened instead of twisted. (*G. Finlay*).—There is nothing remarkable in the *Phalænopsis Schilleriana* flower, either in size or colour; it is good, but there are many equally fine. The other Orchid is an *Epidendrum*, but it was not recognisable in the state in which it arrived.

COVENT GARDEN MARKET.—JANUARY 21ST.

SAMPLES of Grapes firmer all round, best at an advance. Supplies generally good. Trade dull.

FRUIT. Table with columns for fruit names and prices in s. d. format.

VEGETABLES. Table with columns for vegetable names and prices in s. d. format.



DAIRY FARMING.

WINTER.

We have shown something of the harm arising from turning cows out on grass in midwinter, of allowing them to lie upon wet decaying litter, and of keeping them constantly tied up in the cow house. This part of the subject is so important that we return to it. Cows are especially remarkable for regularity of habits, and it is all-important that such habits should be disturbed or interfered with as little as possible now when most of them are forward in calf. Abortion is frequently termed a mystery, but its origin may often be traced to some disturbance of the herd, trifling enough it may be, but yet leading to severe loss, for one case of abortion may, and in point of fact often does, lead to several. So convinced are we of this, that we are most careful to guard the herd collectively, and the cows individually, from undue excitement, as well as from being hurt by one another.

For example: At one of the Michaelmas sales we purchased Dolly, a valuable Guernsey cow, five years old, and due to calve on February 7th. It was driven home quietly and put with some yearling calves upon grass for a week or two. It now has a separate lodge with a small yard for exercise, the yearlings being in an adjoining lodge, with its separate yard divided from the other by palings. By this plan the cow has some company without disturbance, it is quiet and contented, and it will not be put with the herd until it and other forward cows have calved. The introduction of a strange cow into the herd causes much excitement, its reception is often a rough one, and it is liable to be knocked about by the bullies at first, hence our precautions.

It is evening as we write this article, snow is falling fast, and there is a high wind blowing from the north. Each of our delicate cows is comfortably shut in its separate compartment of one of the close lodges, and the stronger and more hardy cows are lying down amicably enough in the deep open lodge, well sheltered by other buildings on the north and east side, and we have seen that all of them have plenty of clean fresh litter to lie upon. Milking begins in the morning at 6.30, bran and cut Mangolds being first put ready for the cows, and when the door of the cow house is thrown open for the eager animals to enter, each one proceeds straight to its own stall, and never by any chance to any other. After the milking, hay is given them out in the yard and open lodges, care being taken to have enough hay cribs for the weaker cows to feed without being driven about by the stronger ones. Water requires no special daily attention, for we have an ample supply which runs constantly through the drinking cisterns. After being satisfied with food all the cows settle themselves comfortably for rumination if the morning is fine, but if wet the stronger cows will often take possession of the open lodges, and the weaker ones are driven out into the rain. Knowing this, we never suffer them to incur such a risk, but make it a standing rule that on a wet morning, after a brief period for exercise, each of the small cows shall be shut in its lodge. The same process of feeding comes again with the afternoon milking at 3.30. Our time for milking may appear somewhat early, but the home farm is half a mile from the mansion, and supplies of new milk have to be sent off twice daily in good time, so as to reach the kitchen department not later than a quarter to eight in the morning, and a quarter to five in the afternoon.

Butter is churned daily for the supply of pats, which are sent up with the morning milk, and there are usually eggs and poultry of some sort, as well as other butter, to be sent according to orders received from the kitchen. This is frequently a source of vexation, the kitchen requirements being ruled by the number of people in the house, and as company comes and goes, more or less farm produce is wanted. An order book is always sent up with the milk, and the conduct of affairs between farm and kitchen is kept as smooth and regular as possible. It has, however, been found necessary to give strict orders at the farm that all hasty demands for extra supplies upon an emergency are to receive immediate attention.

It will be seen that our winter food for cows is of a simple wholesome description. Carrots and Cabbages afford a change, but we never use cake of any kind for milch cows. Our silo will

be opened shortly, and we hope to have in the silage another kind of sound sweet food for cows. Good meadow hay, bran and Carrots, or Mangolds, keep the cows in good condition, and the milk is perfectly sweet. Higher feeding can do no more, and is therefore wasteful and altogether unnecessary. We have no poverty-stricken cows, no winter starving, all of them are in sleek healthy condition; to feed higher would add nothing to the yield of milk or its richness. Dr. Sturtevant's dictum, that the production of butter is largely dependant on the breed, is as true as the equally important facts that there is a structural limit to the production of butter in each cow, and that when the cow is fed to this limit, increased food cannot increase the produce. But we must take good care to have really good cows, for the difference of the various breeds for dairy purposes is so great that we can hardly take too much pains in forming a herd.

Probably no greater contrast has ever been seen in a herd than we once had in a great lumbering Shorthorn, which at best only gave ten quarts of milk daily, and our little compact Kerry, with its sixteen quarts of milk per diem. Here, again, we may quote from Dr. Sturtevant's summary of the results of his investigation of the influence of breed in this matter. The superior cow has the structural limit at a greater distance from ordinary feed, and is more ready to respond to stimuli than the inferior cow. Consequently the superior cow is seldom fed to her limit, and as a practical conclusion, increased feed with a superior lot of cows will increase the butter product; but if fed to an inferior lot of cows, waste can only be the result. No doubt much may be done in the formation of a herd by a judicious expenditure of money, but that alone is not enough, there must be patient and careful selection, and true plodding perseverance to attain our end. The animals we require are hardly to be procured in the ordinary way of business. Shorthorns, Herefords, Jerseys, may all be had, but where are we to turn for perfect cross-bred cows, that well-known excellent cross of Shorthorns of a deep milking strain, and Guernseys? Fine hardy square-framed animals are they, with an abundant yield of the richest milk, and one may very confidently predict that the farmer who could place a lot of such cows upon the market would find the demand for them greatly in excess of any number that he could supply.

Not half enough attention is given to this matter of breeding or keeping really good stock. Take the stock of any ordinary farm, and nine times out of ten we find a lot of mongrel cows, decidedly inferior for dairy purposes. Being once much pressed by a demand for milk which could not well be met, we went to such a farm to inquire if a cow in full milk could be purchased, "Yes;" said the farmer, "you may have any of my cows for £17 apiece," and we had one, which after serving our turn for a short time, was fattened and passed on to the butcher, for its milk was poor in quality and quite below the average of our herd in quantity.

Overmilking is especially to be guarded against. There is considerable difference among cows in the period when dryness begins, some continuing to yield milk till the time of calving. It is a safe and wise rule to have all cows as nearly dry as possible full six weeks before the calf is due; the calf is better nourished, and there is less strain upon the cow.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain	
	Baromet- er at 32a and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature:		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1885. January.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
Sunday	11	28.941	40.0	36.8	N.W.	38.2	47.1	37.3	67.1	32.2	—
Monday	12	29.615	32.2	29.5	W.	38.0	39.8	30.8	53.1	26.5	0.014
Tuesday	13	29.648	32.5	31.5	N.W.	37.2	34.7	30.9	40.2	25.8	0.037
Wednesday ..	14	29.790	31.8	31.2	N.E.	36.5	34.2	29.2	41.5	26.3	0.082
Thursday	15	30.005	36.8	35.8	N.E.	36.3	38.2	31.3	40.2	27.5	0.035
Friday	16	30.071	35.5	33.4	N.E.	36.8	37.8	33.9	40.4	32.8	0.043
Saturday	17	30.033	35.6	35.0	E.	36.8	38.5	33.6	41.9	32.6	—
		29.729	34.9	33.3		37.1	38.6	32.4	46.3	29.1	0.211

REMARKS.

- 11th.—Bright early, then dull.
12th.—Beautiful morning; snow in afternoon; fine evening.
13th.—Dull, with frequent slight falls of snow.
14th.—Morning fair; afternoon fine; evening wet.
15th.—Dull and rainy.
16th.—Dull, damp morning; fine afternoon; damp evening.
17th.—Dull throughout.

A rather cloudy week, with consequently a small daily range of temperature—only 6.2° instead of 12.8° as in the previous week. Snow on 12th and 13th, but it all went on 15th.
—G. J. SYMONS.



COMING EVENTS

29	TH	Royal Society at 4.30 P.M.
30	F	
31	S	
1	SUN	SEPTUAGESIMA.
2	M	
3	TU	
4	W	Society of Arts at 8 P.M.

THE APRICOT.

[The following essay, by Mr. James Inman, Chapel-Allerton, Leeds, was awarded the prize as the best paper on the cultivation of fruits in the recent competition for the prizes offered by Mr. Oxley to members of the Leeds Professional Gardeners' Society.]

THE Apricot is one of the most delicious of fruits, and amply repays the gardener for the skill he exercises in growing it well. In many gardens it has no place, and in others if it does well it is only by chance, and not from the attention which is given to it. This ought not to be so, as the Apricot holds one of the first places as a dessert fruit, and as a preserve there is nothing to surpass it.

The Apricot is propagated by means of seeds, budding, and grafting. Raising plants from seed is, as a rule, only adopted to obtain new varieties. The seeds should be sown in autumn 2 or 3 inches deep in good soil, and covered with leaves or straw to protect them from frost, and the young trees may be transplanted the following autumn, being careful to shorten the tap root so that the roots that follow are more likely to take a horizontal direction. Budding is more generally resorted to than grafting, and the stock mostly used is the common Plum. The best time for budding is July, and care should be taken in choosing the buds that the mistake is not made of employing a fruit bud. Grafting should take place as soon as the sap is active in the stocks, and the parts to be chosen for the graft are the bases of well-ripened shoots; but seeing we can get all we want from the nurseries, whether trained trees or yearling plants, grafting and budding are now seldom practised in private gardens.

The situation which best suits the Apricot is a good wall 10 or 12 feet high facing the south in the northern parts of England, but in the south a south-east or south-west aspect suits it best, as the fruit is not inclined to be so mealy as it is when fully exposed to the south. In preparing the border for the trees care should be taken to drain it well if required, as the Apricot never thrives if the water lodges about its roots. The border in which it is grown should be from 10 to 12 feet wide. If the ground is a wet cold loam or clay the borders must be raised as much above the level of the surface as will admit of placing a layer of stones at the bottom for the double purpose of draining the soil and keeping the roots from the subsoil. It is better in all cases where it can be done to raise the borders even if the subsoil is of a chalky or gravelly nature, for if the soil is dug out to the depth required and the space filled with good soil, especially if the border is narrow, the roots will in a few years extend through the soil, and then meeting with the chalk or gravel the leaves will turn pale and fall early in the season, the shoots will be weak, and the fruits that do not fall will be small, dry, and badly flavoured. Where, however, the borders are raised upon either a damp soil or upon a chalky or gravelly one, the roots are not inclined to strike down, but rather extend near the surface, where they will be in better soil and under the influence of the sun's rays. As the Apricot is often

grown to a great age, and is then more fruitful than when young, it is very necessary to provide for its continuing in robust health. The soil in which the Apricot thrives best is a fibrous loam, and when the trees attain a good size this should be well mulched in the summer, and in dry weather a supply of water occasionally will be beneficial. When the fruit is swelling a little liquid manure may be given with benefit, and above all never allow the border to become too dry in summer, as the leaves are then diseased for want of support, and mildew attacks the tree.

The distance Apricots should be planted apart is about 20 feet, and the best time to plant them is in the middle of October. After they are planted the soil should be well mulched with long strawy manure to protect from frost. It is little use planting them early in the spring, as the Apricot begins to show signs of growth very early in the year, and all deciduous trees root better when the branches are dormant. The best mode of training is the fan shape, as many trees lose some of their branches, and when this is the case those trained in the fan-shape afford greater facilities for filling up the vacancies. The branches should be trained from 6 to 8 inches apart, and to have the lower portion of the tree well filled with vigorous shoots.

Many varieties bear their fruits on the shoots of the previous year, the Moorpark being an exception to that rule, as it bears its fruit mostly on two or three-year-old spurs. In pruning in summer all shoots must be taken off that are irregular or out of place, preserving those that are not very strong, and tie them in while the wood is pliable to the places they will have to occupy the ensuing season. Those that are too vigorous, yet cannot be dispensed with on account of the position they occupy, may be stopped early in June, and by that means may be induced to produce more fruitful laterals. Pruning in winter is best done as soon as the leaves have fallen, but it may be done any time before March. All naked branches may be removed; strong shoots of last year's growth ought to be shortened to where it is thoroughly ripe, and those that are not so strong may be shortened proportionately, in all cases keeping them so far apart that no overcrowding occurs. The general rule to be observed is to remove all unripened wood, judiciously thinning to prevent overcrowding, and take out all branches that are almost devoid of shoots.

As the Apricot flowers very early in the season it is liable to be injured by frosts and cold east winds, which often prove fatal to the crop if no protection is afforded. A coping board on the wall with some upright pieces of wood about 2 inches square covered with tiffany will be found of great service in protecting the trees early in the season, and a covering of wool netting has been found of great service during the blossoming period. It also causes the fruit to ripen more equally by protecting it from the rays of the sun, as we often find in a hot season the fruit is ripe on the sun side, while on the under side it is hard, void of colour and flavour. Thinning the fruits should be commenced as soon as they are large enough for tarts, the fruits being left 6 inches apart, and where the branches are stronger more may be left than on the weaker ones, as it tends to lessen the vigour. The thinning is best done about the end of May or the beginning of June.

The general rules to be observed in the cultivation of the Apricot can be briefly summed up as follows:—A sound loamy soil with little manure, a well-drained subsoil, giving plenty of moisture when required, and liquid manure when the fruit is swelling, tying in the short and moderately strong shoots, thinly stopping those that are too robust and likely to shade the buds during the ripening of the wood, and always having a supply of young shoots to fill the places of those which decay.

The diseases and insect pests are similar to those that attack the Peach. Mildew is one of the most formidable enemies, and it is sometimes caused by too little moisture

at the root, and sometimes by insufficient drainage. A good syringing with sulphur water, and attention to moisture or drainage, as the case may be, will seldom fail in effecting a cure. Green fly is sometimes found on trees, but can be destroyed by frequently syringing with water. A few of the best varieties for cultivation are the red and white Masculine, Roman, Large Early, Royal, Brussels, Moorpark, Musch Musch, Turkey, and Orange, but the one most generally grown is the Moorpark.

ALPINE PHLOXES.

UNDER this head the several evergreen species, together with the varieties of *Phlox subulata*, and the now more numerous forms of *P. setacea* may be grouped, and they constitute a most valuable group among spring-flowering plants. They are hardy in the extreme, and, of perennial duration, not only remain uninjured for years, but annually increase in size and beauty. They are by no means fastidious as to soil or situation, and the primary outlay lasts for years.

These Phloxes, while strictly spring-flowering, must not be regarded in the same light as some other spring-flowering plants, which do not object to be removed once or twice during the season. With Alpine Phloxes, however, the case is quite different, since they are somewhat impatient of being removed, so that when planting them permanent quarters should be selected, with plenty of room to spread. For this purpose no place is more suitable than the rockery or the front row of the herbaceous border; in the former position, especially when overhanging some ledge of rock, nothing produces a more charming effect, and few plants are more deserving of attention. So profuse-flowering are they when in perfection; indeed it is impossible to overestimate their value, and nothing is more effective than fine sheets of flowers a yard or more across.

First we will take *Phlox setacea* and its forms, all of which so admirably adapt themselves for the purposes to which I have previously alluded. These are all perfectly hardy, of close compact habit, and for abundant blooms and diversity of colour are unequalled. The most distinct are *atropurpurea*, which has deep purple flowers produced with great freedom, strong vigorous habit, soon forming a close carpet of its spiny foliage; this is the freest grower of this section. The *Bride* is of neat compact habit, flowers numerous and pure white with a conspicuous red centre; this is a most charming variety. *Compacta* is what the name implies, and is covered with large and showy bright rose-coloured flowers. *Fairy* has creamy white flowers with a carmine eye, very freely produced. *Grandiflora* is a most telling spring plant, having conspicuous flowers of a bright pink with a crimson eye; this is a very distinct plant. *Model* is a well-named variety, forming perfect cushions, which are covered with bright rosy-carmine flowers, which are very effective. *Pallida* is among the best, producing in abundance its rose and lilac-shaded flowers; habit very neat and dwarf. *Vivid* is conspicuous as the most brilliant of them all, and is equalled by none in this respect, much less surpassed, the colour being a vivid carmine rose. Of the effects of a few tufts of these here and there on the rockery or in the border among other spring flowers the reader will readily conceive. There are still other varieties of *P. setacea* from the same source as those already mentioned, but the foregoing are the most distinct. For this unique race of hybrids we are indebted to the late J. G. Nelson, Esq., of Aldborough, whose long and earnest labours were thus well rewarded. The variety *Nelsoni* must, however, not be omitted, and is still to be regarded as a first-class plant; the flowers are pure white. Whether this variety is a garden hybrid from *P. setacea* or not I cannot here determine. In habit the general appearance is a *fac-simile* of *P. frondosa*. Be it what it may, it is a most valuable plant. The nearest approach to *P. Nelsoni* is *P. nivalis*; the latter, however, is a true species and has been long grown in gardens. It is of snowy whiteness, not quite so vigorous as the majority, and still remains anything but a common plant, the plant invariably supplied as *P. nivalis* being *P. Nelsoni*.

P. procumbens is of free growth, soon covering the surface with its purplish green tufts, on which are supported clusters of large lilac flowers with dark centres. *P. pilosa*, an old species from North America, came into our gardens nearly a century and a half ago. It is of dwarf habit with slender hairy stems and rose-coloured flowers. Another species and somewhat rare is *P. amœna*; this has bright rose-coloured flowers. Other species worthy of note are *suaveolens*, *Stelleriana*, and *subulata*. Then we come to the creeping section, of which there are, I believe, two species—*P. stolonifera* and *P. reptans*—among which there has and still remains some little confusion. The former has to my knowledge been sold scores of times for the latter and *vice versa*. The true *P. stolonifera*, however, has violet mauve or bluish slate-coloured flowers, which in point of colour resemble

P. divaricata. *P. reptans*, on the contrary, has large attractive heads of deep rose-coloured flowers, and which are produced earlier in the season than the first named; the latter, however, is generally known as *P. verna*, and which is by no means an inappropriate name. In *P. ovata* we have a good plant growing a foot or more high—a giant form, so to speak, of *P. reptans*, devoid or nearly so of the characteristic of that species, which roots at every joint in its onward course. There is also a variety of *ovata* called *Listoniana*; both are summer-flowering and good front-row plants. All the varieties of *P. setacea*, *P. frondosa*, *P. subulata*, *P. procumbens*, and others of like character are best propagated by means of cuttings. There are many failures in the propagation of these plants by inserting late-autumn cuttings, at which time the wood has become somewhat wiry and hard. The proper time to select cuttings of these is in the late spring months, when abundance of new growths can be obtained. When these are from 1 to 2 inches long they should be stripped off with a heel attached, and without further preparation they may be dibbled into sandy loam either in pots, pans, boxes, or under handlights. Water well and keep them close, when they will form roots in about a month; in less time if they can be accommodated with a dung frame, wherein they will receive gentle bottom heat. A great gain in striking a larger number of cuttings than are actually required is that they may when ready for transplanting be made to form small colonies either in the border or on the rockery, and so produce good effect the ensuing season.—J. H. E.

HISTORICAL JOTTINGS ON VEGETABLES.

THE MUSHROOM.

OUR English word "Mushroom" certainly comes from the French *mousseron*, and that again from an old word of doubtful derivation, yet which is possibly traceable to "mucus" in the Greek and Latin, alluding therefore to the moist or slimy characteristics of plants belonging to the Mushroom group. The Latin generic name—viz., *Agaricus*, points us to a region of Sarmatia, where this and other species akin thereto grew plentifully, probably do so at the present time. The English seekers for Mushrooms are aware that they may be found in many fields and open parks, especially in those where horses are turned out to graze; and the habit of the wild plant would justify its specific name of *campestris*, though it also grows plentifully in some places that are more secluded. The "champignon" of the French and the "pratiolo" of the Italians suggest the same idea, and the earliest historic associations of the Mushroom attach to Italy; yet it does not appear to have been cultivated by the Roman gardeners, but a dish of Mushrooms was made the vehicle of a deadly poison by the vile Agrippina when she wished to remove her husband Tiberius Claudius. A remark made by Pliny shows in what estimation Mushrooms were held amongst the gourmants of Imperial Rome. They regarded them as appetisers, besides liking them for their own qualities of flavour. "A dish of Mushrooms," says he, "is the last device of our epicures to sharpen their appetites and tempt them to eat inordinately." And again he says, "there are some dainty fellows of such fine taste, and who study the appetite to such excess, that they dress Mushrooms with their own hands, that they may feed on the odour while they are preparing the food." It is a singular circumstance, that although the Italians of our time eat several species allied to the Mushroom we cultivate, that is not grown by them, and is mostly avoided when they are gathering edible fungi.

The common Mushroom is not, however, a plant which can be referred to any particular locality. It is found wild throughout Europe, even in the cold Lapland, also in Asia as far as Japan, in both Africa and America. This is easily explainable by the extreme minuteness of the spores and the fact that the air is ever full of them; hence the breezes waft them in all directions, and they settle upon the earth or attach themselves to plants and to animals. Frequently they are swallowed by the latter, but these spores pass through the digestive apparatus of some if not of all animals unimpaired as to their power of germination. Low as the fungi are in the scale of life, they preserve their distinctness, and the Mushroom never degenerates, although there are some varieties; so it is always separable from several poisonous species which yet resemble it nearly. Thus it is easily distinguished from a Toadstool with dark gills, that is otherwise very similar, by the circumstance that the gills change from pinky red to a dull brown; about the same time the cup, from being convex, becomes flattened, while it also turns brown and scaly.

Of the millions of spores that are, as we have observed, distributed through the air, only a part germinate to produce Mushrooms, and the place where they are developed is to appearance a matter of accident; but the cause of their deposition may sometimes be traced, and the horse is conspicuous amongst domestic animals as a propagator of the Mushroom, at least seemingly. There is the notable circumstance that Mushrooms used to be frequently picked on or near the ground daily perambulated by mill horses, when these were employed instead of mechanical means for continuous action. Similarly was explained

the otherwise odd occurrence that in a Derbyshire Potato field a quantity of Mushrooms had sprung up in the midst of the crop, the land had been dressed before planting with some road scrapings. Dry pastures grazed by horses and cattle are always sought out by the collectors of Mushrooms as known to yield them very frequently, though a crop may be discovered in such places as an enclosure with scattered timber where no animals are turned out to feed.

We fail to find any clue to the history of the first experimenters in Mushroom culture amongst us, but some old books on gardening subjects direct persons to collect the young Mushrooms and transplant them to beds of manure in gardens. They were also told that they might obtain a crop of Mushrooms by taking some full-grown specimens, steeping these well in water after breaking them, and then apply the infusion to a plot of earth of suitable kind. Wiser after a time, however, authors advised the growers to seek for spawn upon dunghills or in cattle sheds during September or later, also about dry, not too exposed, fields. They were told to cover the lumps of spawn if dry with litter, but if damp to expose them at first to the air in a cool place, and then plant them in beds made of stable dung, the heat and moisture of which had been carefully regulated, the spawn being set in rows; then the surface was to be gently beaten with the spade, a thin layer of earth placed above, and the bed covered in with dry straw or long stable litter. Extra covering was to be added during winter in the event of heavy rains or severe frost. Such was, in brief, the method pursued by those who raised Mushrooms towards the close of the seventeenth century, and adhered to substantially by those who followed them for a considerable period. Even Mawe and his friend Abercrombie had no idea that spawn could be artificially produced; so they took special care to get it from the gardeners at the heat houses or at Lambeth, because they sent out their men at the right season to spots that yielded good material—that is, spawn in dung heaps, which they preferred to that gathered elsewhere, and Abercrombie notes that the price a century ago was from 5s. to 10s. the bushel.

When the London market gardens were most numerous Mr. Cuthill calculated that quite ten acres of the land were devoted to Mushrooms, the beds being formed on ridges in the open air. Stable manure was exclusively used, and great care taken that it matured without becoming heated. Very little water was given to the beds; this was generally in the form of liquid manure, but the uncertainty of the crop led to the introduction of Mushroom houses. Some cultivators also tried growing Mushrooms in Cucumber or Melon beds. Though little success was attainable with one, the plan answered well with other, the soil of the Melon bed suiting well the Mushroom. After the spawn was put in the Melons were treated as usual, at their decay the bed was well cleaned, and the frames placed on and closed, then a subsequent crop of Mushrooms would be healthy and abundant, continuing until the season became chilly. The primitive Mushroom house was merely a sort of shed in which the plants were protected from rain, and a part at least of the cold; light, of course, was of little consequence. In this the Mushroom house differs from other plant houses. It was a common practice to perforate the shelves with holes, and when they were of wood they were usually narrow, hence it often happened that a crop was obtained from both sides of the shelf, which was kept well covered with straw to maintain warmth. Upon this old-fashioned structure the flued house was a great improvement, and it still maintains its position, under various modifications. It was Isaac Oldaker who first introduced to English notice the German house, brickbuilt, with a single brick wall within the outer one to hold up the sides of the beds and from one end of the air flues. A warming flue went down the middle having a wall upon it, the beds were formed in three or four ranges of shelves, below the tiling was a ceiling with openings.

The Truffle, although much valued by eaters, has never received from gardeners the attention which has been given to the Mushrooms, yet as long ago as 1722 Bradley urged people to go in for its cultivation. Having "caught their goose"—that is, hunted up ripe Truffles, towards the end of the year they were to form a shallow trench, having 2 or 3 inches of loose earth at the bottom, Truffles were to be put in about 1½ foot apart, and a mud of fine earth and water poured upon them till the ground was level.—J. R. S. C.

CYPRIPEDIUM LEEANUM SUPERBUM.

As the early months of the year advance so the flowers of Orchids increase in number and variety, and already collections are beginning to brighten considerably. This can be well seen in the extensive collections at Messrs. J. Veitch & Sons, Chelsea Nursery, just now, for though the numerous houses there are never devoid of attractions at any period of the year, a very great display cannot be expected in November or December. It is true there are many bright and beautiful Lælias during that time, and some Odontoglossums are almost invariably to be found in flower, but we miss the variety which renders the Orchid house so charming at other seasons. The year is, however, too young at present to expect a large number of species in flower, yet several worthy of note can be seen in the houses devoted to them at Chelsea.

Only the favoured few are admitted into that wonderful orchidic treasury, Messrs. Veitch's seedling house, and only those who have seen the surprising number of seedlings in all stages which it contains, can fully understand how it is that so many beautiful novelties are annually presented to the world. The thoughtful labour of many years is represented there, and provision has been made for many years to come; for when the slow progression of seedling Orchids is considered, it is probable that ten or twelve years will elapse before the present seedlings have all flowered and proved their worth or uselessness. Yet surprise is sometimes expressed that Orchids are so expensive when constant and most careful attention is required for a dozen years before any returns can be ensured. Then perhaps, despite the crossing having been effected with the greatest consideration, the result may possess no quality to recommend it. Still, it is most interesting work to watch day by day and month by month for the unfolding beauties of plants that may be worth hundreds of guineas, and if there is occasional disappointment in the shape of one which has to be transferred to the rubbish heap, the successes are so numerous and great that they far outweigh the others.

One of the most recent and also one of the best of the hybrids



Fig. 14.—*Cypripedium Leeantum superbum*.

obtained by Mr. Seden amongst the *Cypripediums* is that of which a flower is shown in fig. 14—namely, *Cypripedium Leeantum*, a most charming Orchid, and one which has a rather interesting history. It is the result of a cross between *C. insigne* Maulei and *C. Spicerianum*, the former being the seed parent, and it combines in a remarkable degree the characters of both parents. *C. Spicerianum* was in the possession of the gentleman after whom it is named for some time before it flowered, and when a flower was sent to Messrs. Veitch for name in 1878 it caused quite a sensation. Perceiving the value and distinctness of the novelty, efforts were at once made to procure the stock from Mr. Spicer, which was effected, and they became the sole possessors for a time of the most distinct *Cypripedium* ever introduced. In the meantime the pollinia of the flower first mentioned was employed in fertilising a flower of *C. insigne* Maulei, which proved successful, and in November, 1879, the seed was sown. The young plants proved of strong habit and quick growth like their parents, and by the end of 1883 flowers were showing, which gradually expanded, and it was at once seen that a very striking combination of the characters had been effected. On January 8th, 1884, a plant in flower, together with its parents, was shown at South Kensington, when the Floral Committee of the Royal Horticultural Society awarded a first-class certificate for it, a recognition of its merits which it well deserved.

The flowering of Mr. Spicer's plant attracted much attention, and

strenuous efforts were quickly made to obtain a supply from its native home. The result was that a large importation was brought to this country and distributed, placing it in the hands of many growers. Whether it was from one of these or from one of Messrs. Veitch's plants we do not know, but Sir Trevor Lawrence, Bart., Burford Lodge, Dorking, repeated the cross already named, with the exception that *C. insigne punctatissimum* was employed instead of *C. insigne Maulei*. This also proved successful, and a pan of the plants so obtained was exhibited at the last meeting of the Royal Horticultural Society, January 13th. The influence of both the parent Orchids was clearly perceptible, but the offspring varied greatly amongst themselves, some being scarcely distinguishable from *C. Spicerianum* and others from *C. punctatissimum*; they were also less bright, the dorsal sepal being narrower than the Chelsea *C. Leeatum*. As, however, they will doubtless pass under the same name, Messrs. Veitch have wisely decided to term their production *C. Leeatum superbum*, the Burford Lodge variety taking the original name. At the meeting last mentioned Mr. Harry Veitch had flowers of the older variety (one of which is shown in the fig.), and when compared with the later production the superiority of the former was unquestionable.

C. Leeatum superbum has a broad rounded dorsal sepal, slightly arched and unfolded at the apex like *C. Spicerianum*, pure white nearly to the base, which is greenish, with numerous violet purple dots scattered over it, varying in size, being largest towards the base. The sepals are white, the petals being greenish with a few purplish dots and a tinge of reddish brown, a similar hue suffusing the lip, but this varies considerably, some being very dark and others very light. The flower is large and bold in appearance, possessing all the valuable enduring qualities of old *C. insigne*, and that it will take a foremost rank amongst the most favourite *Cypripediums* there can be no doubt when it has become sufficiently numerous to be generally known. Its strong free habit will admit of quick increase, and we may expect in a few years that it will be found in most collections of Orchids.

TRENCHING GROUND.

I SHOULD be sorry to be thought disrespectful to my elders and too self-conceited to be open to correction and instruction from them. If we touch old-established doctrines we must be prepared to meet the protests of those who for many years, and their fathers before them, have been in the habit of preaching and practising what we criticise. Fortunately this discussion has been conducted without giving rise to any bad feeling; and if I have lost ground in the estimation of many practical readers of this Journal, it is yet some satisfaction to observe that my expressed ideas on the subject of trenching ground has brought out several very instructive replies from correspondents who do not often venture into print. I have also received several opinions on the matter in the course of private correspondence, and although for the most part in opposition to what I have advanced, giving me the unenviable position of being a glorious minority of one, I yet do not regret having exposed myself to the certainty of defeat. The experience of one respected friend, who, I may be allowed to add, is generally considered one of the best gardeners of the day, is, I should think, unique, and I propose to give it in his own words. He writes, "I was much interested in your ideas on trenching, and after forty years' practice I think you are right and you are wrong. I have done a lot of trenching, and had some queer soils to tackle. In 1851 I took charge of six acres of kitchen garden that had not been trenched for half a century for aught that I knew. The soil was the most tenacious yellow clay, and in the park the footprints of the cattle stood full of water all the winter. The top spit of the garden was so far improved by manuring and liming, and the rest was pure solid clay. Well, it was first drained and then the trenching began. The top spit and all that was tolerably workable was turned into the bottom, and the second and third spits were such clay that each man had a pail of water into which he dropped his grafting tool to make his next spit slip off it. The two spits were all burned into something like powdered bricks, and as each quarter was finished, the heaps were spread regularly over the top spit. Next great quantities rotten leaves, road scrapings, and various other accumulations, with a liberal addition of manure, were wheeled on top of all, and then it was all turned and mixed much the same as we would soil on a potting bench. It would have made a grand Vine border, and such vegetables as it grew I never obtained before nor since. Here we have a heavy cold subsoil, which I dig or fork, and leave it in the bottom, keeping the manure just under the top spit."

To attempt to write down such a thorough renovating process as that above related would be the height of folly on my part, and by quoting it I may be said to have made a rod for my own back. If I had denounced trenching in every shape and form the case would have been different. What I have endeavoured to prove is, that trenching carelessly performed may easily spoil the working of the top spit without greatly benefiting the garden as a whole; and further, that it is quite possible to have a too deep root-run. A subsoil well drained, and with which is incorporated a liberal quantity of porous and lasting material, may prove most congenial to the roots of many vegetables, but I am not yet persuaded that the addition of a quantity of soluble manure mixed with the subsoil is of any real or lasting service. I repeat, that not unfrequently a quantity of good manure is actually buried out of the reach of the roots of some kinds of vegetables, and where it is not properly assimilated by those that do reach it. It may be it is mixed with the subsoil with the idea of eventually preparing it for bringing to the surface after the process so well described by "J. L. B." on page 6. In our case, and in that of many others, this

process would have to be repeated several times before the subsoil would be fit to bring to the surface. And why bring the wretched stuff to the surface, burying that which was both fertile and in good working order? Is the fertile top spit buried in order to further improve it, or is it done with the motive of gradually making all alike? This may be accomplished, but if clay principally abounds it will take a lifetime unless burning is resorted to, and which "F. H.," page 48, also strongly recommends.

All of us are not in a position to do much trenching, but there is less excuse for neglecting the surface soil. The latter is not so easily exhausted as some seem to imagine, and in many cases the reverse happens, a too free use of manure without close cropping, resulting in a poisoned inert mass of soil. Many surface soils would be improved by a dressing of lime, others with road scrapings, ashes, including those from the stoke-hole, leaf soil, burnt garden refuse, and such like; these being forked into the surface rather than deeply buried. Some soils may be improved by the mixing with it of the "shovellings" that are left when bastard trenching behind the first top spit; but this should not be left lying on the surface, but should be well forked in.

Mr. Cakebread allowed his fancy rather too much play, or he would not have quoted me as having said I had never lived where trenching has been done. What I did state was that I had never worked in a garden where trenching has been much resorted to. I also fail to see where I convey the impression that I had never tried what could be done by judicious trenching. As a matter of fact I have had a good deal of trenching done at different times, and have even recently had two quarters trenched for dwarf Roses. If I had not given the plan a fair trial I should not have ventured to express an opinion in the matter. "A Thinker," although he quotes correctly, yet misinterprets my meaning. He infers that I have only had one example of trenching as a guide, whereas what I meant to convey was this: I had only one example on a large scale of the effects of trenching, and in this case a garden of four acres or more was completely spoilt, the subsoil being brought to the surface. This was done thirty years ago, and in spite of re-trenching and various schemes short of burning a layer of it, it is yet one of the worst working gardens I am acquainted with. In my exhibiting days the ground was well trenched for several sorts of vegetables, but in too many cases the results were very disappointing. For instance, if we experienced a wet spring the whole of the soil became badly saturated and very unfavourable to either early working, and, strange as it may sound, to an early deep root-action. Peas became badly diseased or had warted roots, Cauliflowers buttoned rather than started quickly away, and various other crops made poor progress. Then on this deep and loose depth of soil the Brussels Sprouts formed too rank growth and but few good sprouts. Broccoli also became too luxuriant and liable to injury from frosts. Onions were "bull-necked," and did not always ripen satisfactorily. Carrots, Beet, and Parsnips were much too coarse and badly coloured. Strawberries were much too luxuriant to be profitable, and, to finish up, this saturated trenched ground was more given to cracking in dry weather than the ordinarily dug ground. My experience here is a repetition of what happened at my last place. We are advised to trench in anticipation of a dry summer, very few of which we get; but in our case our entrenched land is the most profitable during such a summer as last experienced. Why, then, should I go in for wholesale trenching?

"A Thinker" mentions several notable names—Messrs. Gilbert, Miles, and Muir—all being, I am pleased to admit, men of good experience; but I was under the impression Mr. Gilbert had one of the most fertile gardens in the country under his charge, and that it was only necessary to "tickle" the surface with one of the labour-saving "cultivators" to make it yield extraordinary crops. If I remember rightly, Mr. Gilbert's men presented him with a testimonial as a slight recognition of his kindness in inventing a machine that had only to be pushed or drawn through the soil, this superseding spades and the laborious digging. I will look up my back numbers, Mr. "Thinker."

I am afraid I shall be abused for taking up valuable space if I attempt to further argue out the matter, but must ask to be allowed to refer once more to the unwisdom of encouraging deep root-action in the case of fruit trees. Here at any rate I am on safer ground. Without any information on the subject, I yet dare affirm that the trees at Barham Court are not rooted in the subsoil to any appreciable extent, and that such fruit as is grown there and also at Holme Lacy are produced on trees that are occasionally lifted in order to keep them rooting near the surface as much as possible. Mr. Austin when at Ashton Court was a great advocate of lifting and root-pruning, and he had a fine lot of trees, which produced during favourable seasons grand crops of fruit fit for any purpose. The most successful exhibitor of Pears in the Bristol district, Mr. Rye, gardener to J. Derham, Esq., Old Sneyd Park, Bristol, secures most of his handsome fully-developed fruit from pyramid trees planted thickly and lifted every second year. The ground about these trees quickly becomes alive with roots, and fruitful the trees are bound to be. Fruit trees rooting principally or solely in the top spit are certain to form good fruiting wood, and occasional mulchings will do the rest. On the other hand, if enticed or encouraged to root into the subsoil, rank unfruitful growth will follow. Cease pruning and this growth will become fruitful, but what about the quality of the fruit? If deep root-action is so congenial to the trees, why do so many preach and practise root-pruning? "A Thinker" indirectly asks if I would form a Vine border only 12 inches deep. This would depend upon circumstances. If it was to be drained similarly to most borders I would make it 2 feet in depth; but if it was to rest on an ordinary subsoil, then 12 inches in depth would be ample, and this shallow border properly treated would swarm with roots and be fed up at leisure. Half the Vine borders in the country are too deep, and in

many cases a deep and unhealthy root-action followed by other evils is the consequence.—W. IGGULDEN.

[Our correspondent has no cause to fear being "abused" by us, as we consider our space has been occupied by valuable matter from him and others in this discussion of an important subject.]

THE GERMINATION OF SEEDS.

[A lecture delivered before the Institute of Agriculture, South Kensington, March 31st, 1884, by Professor G. T. Bettany, M.A., B.Sc., F.L.S.]

THE subject of the germination of seeds is one in which pure science and practical experience come very close together. The agriculturist, whether he is concerned chiefly in corn-raising or in fodder-production, or whether he takes up the departments of vegetable or root-growing, cannot help occupying himself much about seeds. He either wishes to produce good seeds, or good plants from seeds. Many, I am sure, must have a practical acquaintance with the subject which it is totally impossible for me to attain, and it would ill become me to trench on their province, and on that of the distinguished Director of this Institute. But to the botanist and vegetable physiologist the word germination is full of suggestion, combining as it does apparent simplicity with the profoundest consequences.

The botanist thinks of the young plant hidden in the seed in a state of rest from which it has to be awakened, the passive to be made active, the dry to become moist. The physiologist, knowing the condition of the ripe seed and that of the growing plant, feels the force of the contrast between the two, and the word which to him is most significant in considering the work done is that which indicates agitation and active change—namely, ferment. What the changes are which the plant undergoes in germination, and how they are produced, is in effect the subject of this lecture.

First, as to the structure of the seeds which we want to germinate. Without going at all into the processes by which they are formed, let us take them as ripe seeds—smaller or larger masses separated from a parent plant, capable of producing, under favourable conditions, a plant like the parent in all essentials, though it may differ in minor points—in height, in number of leaves, in weight, &c.

The true seed of a flowering plant is one of the features by which it is most markedly characterised, so that it would be possible by that alone to be certain that it was not the product of one of the non-flowering plants, a Fern, a moss, a Mushroom, or a Seaweed. The seed of a flowering plant is a more advanced structure than the spores which the non-flowering plants produce; it contains within itself a miniature or embryo plant which has already made some progress in development, and manifests in most cases those distinctions into parts which are of prime importance—namely, root, stem, and leaves.

Such a seed as the Bean, when ripe, contains nothing of importance except the young plant. When the skin is peeled off, the rest of the seed readily falls into two divisions; yet these are not totally separate, but connected at one side, near the spot where the seed was fixed to the pod. These two large lobes, each being nearly one-half of the seed, looking extremely unlike ordinary green leaves, are yet, in a botanical sense, the first two leaves of the plant—the seed-leaves, often called cotyledons. And from this peculiarity of having two equal seed-leaves fixed opposite one another to the rudimentary stem, the great proportion of our flowering plants, including the Cabbage and Turnip tribe, the Rose and Apple family, the pulse and Clover group, the Mangel and the Oak, are called dicotyledons.

At the point where the two seed-leaves are fixed there is a little stem, which is continued one way (pointing towards a little hole in the seed-coat), into a cone-shaped growth, the radicle or commencing root. Passing in the opposite direction is a little portion of stem bearing a few very small leaves. These are flattened and folded together, so that they lie snugly between the seed-leaves near their edge.

Now this represents the plan of all the seeds of what may be called the highest kind, where the structure is the most advanced. We meet with great differences in the size of the seed-leaves as well as varieties in their contents. They are sometimes found folded double or even treble, as in various members of the Cabbage tribe.

But there are many seeds among those with two seed-leaves which have not proceeded so far towards simplicity of structure. In addition to the minute rudimentary plant, they may have a store of nutriment between their thick seed-coats and the small embryo; and this in many plants constitutes the main bulk of the seed, as in the Carrot and Parsnip. It has often been called albumen—bad term, because it has a definite chemical meaning, whereas the substance to which it is applied in seeds has a great variety of chemical composition. I will speak of it only as the embryo food. It is the store upon which the young plant is at first fed. The main difference between the Bean and the Carrot seed is that the young Bean plant has eaten up all the embryo food, while in the Carrot seed the embryo is small, and a quantity of embryo food remains unconsumed. And thus we consider the Bean as a higher type of seed, because its embryo has already got within itself all the food which the parent plant afforded it, while the little Carrot plant has its embryo food in large part outside itself, and in germinating has to set to work to absorb something external.

Our grain plants, as well as the Palms, of which the Date affords a familiar specimen, have seeds containing both an embryo and embryo food, the latter usually of much greater bulk than the former. Consequently Wheat, Barley, Indian Corn, &c., consists of a much greater amount of embryo food than of embryo plant. Then, again, the embryo

itself is framed on a different plan. We do not meet, in these grains, with a pair of equal seed-leaves or cotyledons. Just as in the growing Corn we find the leaves wrapped up beautifully one within another, so it is in the young state. They arise alternately one on one side of the young stem, the other on the other, and fold one over another.

But the first of the young appendages—that which is of most importance in the actual germination—extends, in a seed like Maize, right over the rest of the young plant, so as to overlap both the young bud of small leaves and the young root, and it is in contact by its outer edge, in its whole extent, with the embryo food. It is by means of this surface that the young plant feeds upon and absorbs the stored-up food.

Next, as to what these seeds consist of chemically. As in the entire plant, and in the manures or foods necessary for it, these substances can be classified as nitrogenous and non-nitrogenous; and inasmuch as the simpler kinds of nitrogenous bodies, ammonia and the nitrates, do not become solid deposits in plants, this term "nitrogenous" will here principally apply to complex bodies, albumen, casein, gluten, fibrin, and, speaking generally, proteids, all of which contain carbon, hydrogen, oxygen, nitrogen, and sulphur.

When the seed was advancing to maturity it, of course, included a large proportion of these complex bodies, which go to make up the living substance or protoplasm of plants. At the end of the drying process it is not the case that all this living substance is wasted or decomposed. After parting with very much of their water, the nitrogenous substances appear as dry bands between the starch granules, or as little grains, sometimes of no definite shape, sometimes resembling true mineral crystals very closely. In one or other of these shapes the nitrogenous matter, by which the living plant is to be again started on its course, is preserved during the dormant or resting period. Nay, so completely and thoroughly is the continuity and descent from the parent plant maintained, that the little corpuscles of living substance out of which the future green granules of the plant-leaves are to be developed are continuous descendants of corpuscles in the seed of the parent plant, to which the term starch-generators is becoming applied. For the main function of the green granules in leaves, as of their colourless representatives in store organs, such as seeds and tubers and roots, is to form starch and allied substances.

By far the most abundant of the non-nitrogenous constituents of seeds is starch, which occurs in the cells of which the cotyledons or seed-leaves consist, and in the embryo food, and in the form of countless granules, of characteristic shape and size in almost every plant, usually packed closely in the cells, with the little spaces between them devoted to the alluminous matters just spoken of. I will only refer to the fact that the starch granules consist of layers having slightly different amounts of water combined with them; also, they are not quite simple chemically, consisting of two nearly allied compounds intermingled, giving slightly different reactions.

Very closely connected in per-centage composition is the material of which the cell walls are composed—the cellulose membrane. When starch is abundant—or something equivalent to it—the cell-membrane is thin; but in some seeds, as in the Date stone, it is extremely thickened, so as to form almost the entire mass of the seed, and actually take the place of starch as the food store to be drawn upon during germination.

Yet another kind of non-nitrogenous body has to be mentioned—namely, oil. The oils occurring in seeds agree in being composed of carbon, hydrogen, and oxygen, and in having comparatively little oxygen. Oils are abundant in many seeds which have little or no starch, such as the castor-oil seed, rapeseed, linseed. It is found in minute granules and in smaller or larger drops in the cells, between the nitrogenous grains or particles.

(To be continued.)

WINTER DRESSING FRUIT TREES.

(Continued from page 12.)

INSECTS.—We are sometimes asked to believe that potent as some insecticides are when applied to the perfect insect, the eggs are proof against them, consequently winter dressings are practically useless. Practice has, however, proved the value of the dressings, as the trees so treated are much freer in the ensuing season than those not so treated. There is no doubt much to be stated both for and against the practice of winter dressing fruit trees, and I will admit that if it is coating the bark of trees with a pigment that leaves a thick deposit, it is much better left alone, as it really serves as a protection. Every cultivator seems aware of the injurious effect of moss and lichen on the bark of trees, and yet coats the bark with a pigment which seals the pores as effectively as a coating of moss or lichen. I have found winter dressings useful, and there can be little objection to removing any loose bark from Vines in order that the insecticide may be more effectively applied, but any removal of even loose bark so as to suddenly expose the inner to severe cold must have a bad result from giving a check, hence it should be done in moderation, and never so as to wound or injure the quick.

After the pruning of fruit trees is completed, and before the trees are secured to the wall, they should be dressed with an insecticide, and there is no better means of doing so than with

a brush, employing the insecticide in a liquid state, and in such manner that it will penetrate every crevice. The potency of insecticides depends greatly upon their application. The brushing dislodges the insects, and when this is the case the destruction is more certain. Care must be taken not to injure the buds, at the same time they must not be neglected, as the insects are mostly secreted as near to where they will be supplied with food when their active life begins as the requisite shelter admits; therefore brush well about the base of the buds, and by drawing the brush towards them upwards or outwards from the shoots little injury need be done. The wall, too, should be well washed with the insecticide, applying with a brush as in whitewashing, and repeating it over the wall, wires, and the trees if they have been much infested with insects. The trees must be dressed before the buds have made much advance in swelling, and it is needless to add that trees in the open may be treated in a similar manner. Brushing may seem a tedious process, and it is, still I give it preference for reasons above noted; also on the score of economy, for syringing is wasteful.

Then as to insecticides. Home made solutions of softsoap, tobacco water, sulphur water, &c., are good, some of them quite as effectual as any of the modern insecticides, and much cheaper; whilst the patents from Gishurst down to nicotine soap, Fir tree oil, Hudson's soap, and Eureka are thoroughly efficacious for their purpose. Perhaps the most popular of insecticides is petroleum, and it is cheap. There is no insect that it will not kill, and it can be applied in a ready way, or by syringing, which enables the cultivator to dress a number of trees in a short time. To administer it effectively, however, two persons are necessary. To apply it without thoroughly mixing is to give some parts a coating of the petroleum in a pure state to their injury, whilst others receive nothing but water. A wineglassful of petroleum to three gallons of water is a proper quantity, the water to be hot, and holding in solution half a pound of softsoap. It may be kept mixed by a person stirring it briskly with a broom handle, whilst another is applying it to the trees at a temperature of 120° to 140° with a syringe, or one person syringing into the vessel whilst the other is applying it. This should be done on a calm day, and if repeated it must be done before the buds have swelled much. The petroleum mixes more readily in hot than in cold water, and it adds considerably to the efficacy of the solution; in fact the temperature alone is sufficient to destroy insects and their eggs, for the sudden heat and equally sudden chill is more than they can endure.

As to the time most suitable for winter dressing fruit trees, there is much to be said in favour of its being done when the leaves have fallen in autumn, and I would advise this where the trees have been much infested with insects in the summer. The petroleum can be applied without loosening the trees from the wall, and it will cleanse the wall equally with the trees, there being this to be said in favour of autumn dressing, that it effectually destroys the insects existing, and prevents their seeking the protection of the trees and walls for the winter. But I consider the most desirable time to dress fruit trees is as late in winter as is safe, on account of the swelling buds, for with the return of the trees to activity there comes an awakening of insect life, so that they are more readily reached. In the matter of mussel scale on Apple or Pear trees, the best thing to employ is methylated spirits, applying it with a soft brush, and it is equally effectual for all the coccus family. Petroleum is also effective applied with a brush, and equally so is fish oil. The three are destructive of American blight, but they must be used in their pure state as a winter dressing, and care be taken not to coat the buds with petroleum or fish oil. I think petroleum the best for general use as it is cheap, but methylated spirit is the least objectionable.—G. ABBEY.

(To be continued.)

ALPINE AURICULAS.

I HAVE no doubt there are many gentlemen's gardens where the Alpine Auriculas are grown; but if there are, I rarely go to the right places to find them. The show varieties are certainly not grown by many gardeners, neither are they likely to be, as good varieties are very dear and scarce, and they are so slow to increase, that they do not change hands quickly. They are easily grown; but they require special treatment and a little more care than many head gardeners can find time for in large gardens, and to leave them in the hands of young men who do not understand them would be death to most of the plants. Not so the Alpines, as they might be left in the care of any ordinary intelligent young man. They are so hardy that I have never known frost kill them when planted out in a frame. I have known frost injure them when grown in pots and left exposed to the weather, the

soil and plants being wet when frost occurred. We leave our lights propped open all weathers unless we expect more than 7° or 8° of frost, we then close them, but they are never covered. They make very good plants for room-decoration or for the conservatory, and will last a long time in flower if kept cool and well shaded.

The pots should be well drained, from 1 to 1½ inch deep, according to the size of the pot. A good soil is a good light fibrous loam with one-fourth of old cow manure. A plant with about three crowns should be put into a 3-inch pot. A 5-inch pot will take one with five or six crowns, and no larger size need be used. They may be potted any time during the summer, the best time is as soon as they have flowered. Water them well, and stand them on ashes the north side of a wall. If very heavy rains follow they should be protected with lights until they are established. Weak liquid manure may be given once until they stop growing, and should be given again as soon as they start growing in the spring until the flowers commence opening, when it should be discontinued. They should be put into frames in November to protect them from heavy rains. Supply water careful during winter.

We grow them planted out in frames, and they are greatly admired in the spring when in full bloom. They have a most pleasing fragrance, which is perceptible at several yards distance. We give a good drainage of broken bricks, on the top of which we put a layer of gravel, then 4 or 5 inches deep of light fibrous loam, with a few wood ashes. Sufficient drainage is given that the surface of the soil will be within 1 foot of the glass. They are then planted, and when we have plenty of pieces two or three crowns each are placed in; but when we wish to make the most of a sort we plant each crown or sucker separately.

Planting is done by drawing the earth back with a trowel, pressing the bottom firmly, cutting off what is called the tap root, but which is really the old stem, the roots are spread out evenly and covered with an inch of soil made quite firm by pressing with the hands. They are planted about 6 inches apart each way. A good supply of water is given, and they are kept close for about a week and shaded. Ventilation is gradually given until they are established, when the lights are taken off for the summer months until November; but the plants are shaded from midday sun in hot weather. As the leaves decay they should be removed; if not, they will sometimes cause the stems to decay. When the position is well drained and the soil shallow they cannot easily be over-watered when growing or flowering, but they should only be kept moist during winter. We lift the roots and replant them every alternate year, adding fresh soil each time. When not replanted they are top-dressed with a similar soil, but with one-third manure added.

A few years ago we purchased the best-named sorts from Mr. C. Turner, from these we raise a batch of seedlings every year, and it is very interesting watching for something novel and good. We save the best, the others are either given away or planted outdoors. The strong-growing seedlings are very suitable for shaded rockeries.—J. L. B.

ADVANCEMENT OF THE POTATO.

THE importance as well as the interest which at the present time attaches to any efforts to improve on or to fortify against disease our home food-producing plants, will render unnecessary any preface or apology for the following record of what I have been attempting during the past season in the Bedfordshire Experimental Gardens as regards the Potato, and much of which I had previously proposed to myself to carry out before the recent announcement of the re-introduction of some of the wild allies of the cultivated Potato. My zeal for the work, however, was much enhanced through the kindness of the authorities of the Royal Gardens at Kew, and of M. Blanchard of the Seamen's Hospital, Brest, who supplied me early in the past year (1884), the former, with a few tubers each of *Solanum Maglia* (the Darwin Potato), *Jamesii*, and *tuberosum*; and the latter with a few specimens of *Commersonii* (Ohrondi). These were kept in a cool place and planted in pots in a frame on the 29th of March and 2nd of April. A small portion of the stocks of *SS. Commersonii*, *Jamesii*, and *tuberosum* were also, on the later date, planted in the open ground. Few only of the pieces or tubers of *S. Commersonii* and the tubers of *S. Jamesii* started in the pots, and all appeared delicate, having perhaps been weakened by deferred planting. Three potted tubers of *S. Maglia* grew and sustained a fairly vigorous growth. *S. tuberosum* grew well both in pots and in the open ground, but the planted-out pieces of *S. Commersonii* never appeared at all above ground, and the plants of *S. Jamesii* were very weakly. As regards the first mentioned, I had an impression when I saw the tubers that they corresponded with some kindly sent me three years since by Messrs. Cheal of Crawley, Sussex, as a re-introduction from Mexico by the late Capt. Mayne Reid of the true wild Potato; and this impression has since been confirmed. I found *S. tuberosum* a much stronger and coarser-growing species than either of the others tried, and quite as vigorous as any of its cultivated descendants; but as it was no less liable to disease than the higher cultivated types I

did not on any occasion attempt to breed from it. My stock of Potatoes for use in crossing consisted of nearly 1000 intercrossed seedlings of my own, obtained from the best known and popular market sorts of the cultivated Potato, the majority of them having been produced with a view to obtain good hardy and disease-resisting new varieties.

These were on trial with most of the best new and old sorts in commerce. I had also two years previously planted in the open ground a strong plant of the hardy indigenous *Solanum Dulcamara*, for the purpose of intercrossing with the cultivated Potato, and I now determined also to use the species received from Kew and Brest with a like object; but it seemed to me the more desirable to secure, if possible, not only crosses with the tuber-bearing *Solanums*, but also with a non-tuber-producing species having a woody stem, tough foliage, and of a hardy constitution, and these qualities appeared to be combined in *S. dulcamara* to a greater degree than in any other species known to me. And although I was reminded I should be dealing with a reputed poisonous plant of perennial character, and a non-tuber-bearer differing much in habit and foliage from those of the Potato, and that in attempting to breed between two such apparently widely varying species I should be treading on somewhat uncertain ground, I recognised the facts that the Potato also is poisonous in stem, leaf, and fruit, as well as practically perennial. I surmised also the probability that tuber-bearing was an after-acquired deviation or adaptation of the genus, and in the absence of any positive evidence of the refusal of a tuberous to cross with a non-tuberous species, I have been induced to try to mingle the blood of the English Woody Nightshade or Bitter-sweet with that of the edible Potato. As one of my subjects for operation I proposed an early-ripening Potato, the Hammersmith Kidney, which only rarely fruits or blossoms, and in order to get a few plants of this to flower in the open ground I resorted to the plan of removing from time to time all accessible tubers as they formed; and as a consequence I was, to my gratification, rewarded with blossoms, the gratification being increased in consequence of the failure of a previous attempt made about twenty-five years ago, and before I had seen the late Mr. T. A. Knight's paper on the subject, when I unsuccessfully tried the experiment with the old Ashleaf Kidney planted in pots. I should premise that none of the flowers operated upon in the course of my experiments were emasculated, as in the *Solanex* the anthers form an important part of the flower and are too firmly attached to the filaments to be removed without much injury to the organs of fructification, and causing the blossom to drop off prematurely. Pollen from two, three, or more flowers was applied to the seed-bearing plants early in the forenoon, prior to the bursting of the anthers of the flower operated upon, and the application repeated the same afternoon or the following morning, this being the plan I have usually followed in crossing the Potato and some other plants from which it is frequently difficult to obtain the pollen from any single flower. As emasculation was not resorted to, it would have been useless to protect the flowers from natural self or cross-fertilisation, and, indeed, I have little faith in the practice unless it can be carried out with the greatest nicety, and I follow it only in most exceptional cases.

I commenced operations on the 12th of June by using the pollen of the earliest Potato I had then in flower upon *S. Dulcamara*; and between that date and the 1st July I made sixteen attempts with various Potatoes in the same direction, and in three cases success would appear to have followed, as I have obtained three ripe berries fairly filled with seeds. I also endeavoured, between the 18th June and 1st July, to fertilise thirty-four blossoms of various Potatoes with the pollen of *S. Dulcamara*, and in three cases have again been apparently successful, having been rewarded with three ripe berries containing seed. I have also succeeded in obtaining one ripe berry with two seeds only, out of two crosses of *S. Dulcamara* with *S. Commersonii*. From an attempted fertilisation of *S. Dulcamara* with *S. Maglia* the result was nil. In nine attempts between the 27th June and the 11th August to cross the plants in pots of *S. Commersonii*, in a well-ventilated frame, with various Potatoes, the result was also nil. Forty-two attempts made between the 30th June and the 11th August to cross, under a frame, *S. Maglia* with various Potatoes also gave futile results; but out of three attempts made to cross the Hammersmith Kidney Potato in the open ground with the pollen of *S. Maglia*, a single ripe berry, containing twenty seeds, has been secured, making a total of eight berries only out of 107 attempts at intercrossing, as tabulated below.

Table.	Attempts at Fertilisation.	Berries Obtained.
<i>S. Dulcamara</i> with various Potatoes ..	16	3
<i>S. Dulcamara</i> with <i>S. Commersonii</i> ..	2	1
Potatoes various with <i>S. Dulcamara</i> ..	34	3
<i>S. Commersonii</i> with various Potatoes ..	9	nil.
Potato Hammersmith Kidney with <i>S. Maglia</i> ..	3	1
<i>S. Maglia</i> with various Potatoes ..	42	nil.
<i>S. Maglia</i> with <i>S. Dulcamara</i> ..	1	nil.
Total	107	8

It will thus be seen that where Messrs. Sutton, in their interesting experiments at Reading (recorded in the *Times* of the 29th November last) have apparently succeeded, I have failed, doubtless owing to my plants of *S. Maglia* and *S. Commersonii* being operated upon under artificial conditions in a frame, as I hesitated to plant them out for fear of checking the blossoming of my small stock. On the other hand, it may be that I have succeeded in an equally important, though converse direction, by obtaining seeds from a Potato crossed with the pollen of *S. Maglia*, and in another and more varied direction in securing seed from a Potato crossed with *S. Dulcamara*, and from that distinct species crossed with Potatoes *Victoria* and *white-skinned Beauty of Hebron* and from

S. Dulcamara crossed with *S. Commersonii*. It is, however, the prospect of progeny between the Potato and *S. Dulcamara* that my interest will be centred in, as after making use of my plants in pots of *S. Maglia* and *S. Commersonii*, they with the plants of *S. Jamesii* and *S. tuberosum* were turned out into the open to ripen, and on examination in October I found nearly the whole of my stocks had disappeared from disease, apparently the ordinary Potato murrain, which had been rife in the locality. *S. Jamesii* was very weak both in pots and the open ground, and did not flower, and I looked upon it as altogether unsuited to my purpose. *S. Commersonii* was the first to flower, and, with the exception of a late-started plant, ripened off earlier than either of the others. On none of the imported species, either in pots or in the open, were there any seed balls. My further notes of the growing plants, made from general appearances only, are as follows:—" *S. Commersonii*, slender stem, foliage somewhat frizzled, flowers purplish blue and white" (others have noted this species as having white flowers), "query, in Ashleaf race of cultivated Potatoes." "*S. Maglia*, stronger stemmed than *Commersonii*, flower white, looks as if already in the blood of cultivated Potatoes." It is, of course, too soon to predicate profitable and certain results, especially bearing in mind that peculiarity or quality in flavour only, or even combined with a perfect disease-resisting power, would be of little utility unless accompanied with great productiveness, and it can hardly be expected that the produce of such prolific Potatoes as *Magnum Bonum* and *White Elephant* can for many generations be excelled or even reached by the infusion of any of the species above alluded to. Furthermore, it will in no case do to take it for granted that an actual cross has been obtained; but looking at the number of apparent failures and successes in proportion to the number of attempts, and taking into account also certain variations in the numbers of the seeds produced and of those obtained from the same plants normally fertilised, I am inclined, at all events, to prospect some novel, if not practical, result.

Should a slight deviation only be obtained from either of the parents in the crosses between the Potato and *S. Dulcamara* on the one hand, in the direction of a more woody stem in the seedlings from the Potato, or on the other hand in the way of tubers to the seedlings from *S. dulcamara*, I should deem it an important gain, as on recrossing the deviating seedling with their parents a road would be opened which, being steadily followed up by further intercrossing, might lead to some certain and useful result. Next season, when I hope to continue the work and observations, ought to show whether my endeavours will have been attended with any amount of success.

I have used the term "cross-fertilisation" throughout these notes in preference to the perhaps, in some instances, more correct definition "hybridisation," the former term appearing to me wider in its meaning and including hybridisation strictly. Anything worth recording hereon in future shall be at the service of your readers.—THOMAS LAXTON (in *The Irish Farmers' Gazette*).

VINERIES.

I HAVE read Mr. H. W. Ward's remarks upon the building of vineries and consider them excellent generally. The advice is sound, and the building and internal arrangements are quite the best if I may except the heating. I do not agree with him in placing the pipes thus—four in front and two at the back; a better way is to have the six pipes spread evenly over the surface of the border—say the first pipe to be within 4 inches of the front wall, the remainder to be placed at equal distances of, say, 1 foot 9 inches apart. Instead of building a 9-inch pier for each pipe to rest upon, a better way is to have light H-shaped iron girders resting on a 4½-inch brick pier built in with the front wall of the house, and another 9-inch brick pier built to support the girder at the back. For a vinery 30 feet long four of these girders are sufficient to carry the pipes, they do not cost so much as brick piers.

My reason for placing the pipes in the way named is this, that the heat from them is better equalised over the house than when the pipes are placed together. Generally when they are placed as Mr. Ward proposes the Vines are more forward in that part of the house, and much more liable to the attacks of red spider, caused by the extra heat emitted from the pipes. In placing them as I suggest the temperature of the whole house is more equal, consequently there is less danger of red spider attacking the foliage in that particular spot.

When the whole width of the vinery (17 feet) is not used for the Vine border (and it is hardly necessary), good pathways can be made by using Portland cement, which makes a clean hard pathway, very durable, easier to clean than iron gratings, and quite as cheap when taking into consideration the framework required whereon the iron trellis rests.—E. MOLYNEUX.

INSECTIVOROUS PLANTS.

IN the introduction to the very interesting remarks anent these plants in the Journal, page 73, one statement at least may create in some minds an erroneous impression—viz., "Insectivorous plants have the power of taking solid food into a structure which we are justified in calling a stomach," this being based, I take it, upon remarks made a line or so previously as to the propounded distinction between animals and plants in the matter of food consumption. Quoting again, we find these statements:—"It was also said that animals were capable of consuming solid food while plants were not; this is also incorrect." Now, there is no absolute analogy between the assimilation—a term not at all satisfactory—of plants and animals. Granted the original definition of these

creatures is faulty, yet there is still much more of truth in them than is represented in the foregoing remarks. Plants never do, neither have they power to consume solid food in the sense that animals consume it, not even insectivorous plants, however highly developed they may be. The root is the recognised medium by which plants receive their food, nitrogenous included. In some instances there doubtless is an incapacity on the part of the root to obtain nitrogen from the soil, so that special organs are developed to secure for the plant what in a general way is the function of the root to do, such special organs being in my opinion no more the analogues of the stomach in animals than the primordial vegetable cell itself. Certain is it that in these special organisms, whether we consider the leaf of the Sundew, the bladder of the Utricularia, the dilated petioles of Nepenthes, Sarracenia, and Cephalotus, or the cup-like cavity in the common Teasel (*Dipsacus sylvestris*), there are marvellous contrivances to effect a purpose; but in all cases, in varying degree, a protoplasmic solvent is poured forth which completely dissolves the material sought by the plant; the nitrogenous material is absorbed by special cells, but in no extraordinary manner, and the useless material is discarded. I am not sure whether any carbon is thus taken up, which is so important a feature of animal assimilation. For example, examine the remains of flies upon the Sundew and you will find nothing left but what is either insoluble by the solvent excreted by the plants or which would not serve as nutrients to them.

Reading through the article referred to brought to my mind some interesting examples of these plants which are not mentioned in it, and which may perhaps interest some of the numerous readers of the Journal. These are the Bladderworts (*Utricularias*). And first of all allow me to ask one question, Can any reader record instances where he or anyone else has ever seen water fleas actually entering the small bladder-like cavities? Certain it is they do get inside, for they are found there in abundance, but few have ever seen them really pass through the small trap-door. A Mrs. Trench of New Jersey says she has, and of course we must accept her statement, as we are sure they get in, and there is but one way of doing so—by a curious little opening guarded with projecting hairs, supplemented by acute hairs inside, which makes ingress easy but egress impossible. The prisoners struggle and struggle in vain until they are exhausted, and are finally dissolved by the protoplasmic fluid given out inside the bladders. Another question anent these plants—viz., Have any readers of the Journal ever known them to produce seed? An interesting provision is made for the perpetuation of the species in the form of a terminal bud, in which the future plant rests during the winter, and in spring develops rapidly.

Another very interesting plant is the common Teasel, the upper leaves of which, it is almost superfluous to say, are united by their bases, forming a cup-like cavity round the stem, in which may be found collected in varying quantities a fluid putrid with the decaying bodies of insects, the nutrient material of which, or at least as much as is necessary, is absorbed by the plant. This fluid is rendered a solvent of this insect food through the agency of protoplasm, which is evolved in thin strings from short obtuse glands, these strings being naked protoplasm, the only instance where such is known to occur; these coming in contact with the water previously collected elongate rapidly and ramify in all directions in the cavity, and possess the power of reducing previously solid food to a state of solution in the fluid modified by its presence, in which condition it is absorbed by the plant.

With regard to the introduction of *Sarracenia* I think there is some doubt. It is generally said to have been introduced in 1640, but undoubtedly it was introduced some years before then. Parkinson figures examples both of the flowers and plant in his "Theatre of Plants," page 1235, this work being published in 1640. The author says, "This was sent to Clusius from Paris, but of late Mr. John Tradescant the younger found this same plant in Virginia having his top thereon, which he brought home, and groweth with him, which I here show you with Clusius his figure." Curiously enough, Parkinson classed it with the Sea Lavenders, and called it a *Limonium* or the "strange plant of Clusius."—T.

CHRYSANTHEMUM NOTES.

LARGE BLOOMS AND "NATURALLY" GROWN PLANTS.—In spite of all that is said against them large blooms are fast gaining favour. Although I am a lover of such, I am at the same time not so foolish as to think that is the only proper way to grow them. Why not allow everybody to please themselves? After all, it is only a matter of taste as to which system is adopted. The correct way where space can be afforded is to grow them in several styles. At the present time a confusion exists as to which is the "natural" way of growing Chrysanthemums. Many people advocate the "natural" style, but it only requires a little thought to see that scarcely any plants are grown "naturally." What I consider "natural" grown plants are those grown from cuttings, never stopped, the shoots not thinned, nor any flower buds taken off. Now, are there any Chrysanthemums so grown? I would ask. If so, are the results satisfactory? If they are grown in the way intimated they will be from 2 feet to 10 feet high, according to the variety, with, in the case of the largest varieties, long stems, with perhaps no leaves for about 6 feet high. When the step ladder has been brought into use to examine them a host of flowers will be found, most of them with a large yellow eye, the blooms not a quarter the size they ought to be, and the variety scarcely recognisable.

What I suspect is often meant by naturally grown plants are those that are raised from cuttings in the usual way, pinched two or three times to make them bushy by increasing the number of shoots to each plant,

then allowing them to produce as many flowers as they choose. I admire plants grown in the way I have last described. These should be called bush plants, which term is much more applicable than "naturally" grown.

I contend that the only way to show the true character of each variety of Chrysanthemum to its utmost capacity—that is, size, colour, and form—is by growing them under what is termed "the large bloom" principle. If Mr. Murphy were to grow his plants under that system he would not have to complain of hollow-eyed Elaines. There are no different stocks of any variety of Chrysanthemums; one person may have one sort quite different in some way from what his neighbour has, but the change is the result of different soil or culture. Those who wish for perfect blooms of Chrysanthemums can have them, and without "hop poles," but by growing "bush" plants they never can have really perfect blooms of all they would like. What I mean by perfect blooms is this: take any one variety and grow it as well as it is possible to do, then take the same variety and grow it as a "bush" plant, and compare the result. I do not contend that mere size is the only desideratum. The perfect bloom is one of large size in diameter, breadth of petal, substance, colour, and form without any dressing. Now, under the bush system you cannot have these points developed in the same way as they are when grown by what is acknowledged as the "large bloom system." The points I have named are all that can be required in a perfect bloom. It is the same with a Chrysanthemum as with anything else—a bunch of Grapes, for instance; size of the bunch, berry, colour, and form of the whole go to make a perfect specimen. Can this be done without special attention, such as thinning the bunches and berries and applying stimulants?—would this happen if they were allowed to grow in a "natural" way? It has been proven over and over again that one perfect bloom of a Chrysanthemum is more appreciated than twenty imperfect ones by the majority of people.—E. MOLYNEUX, *Swanmore Park*.

CHRYSANTHEMUMS AT THE NEW YORK SHOW.—Mr. Gerald Howatt gives the *Country Gentleman* some account of the Chrysanthemum Show at the fair of the American Institute, from which we take the following, as giving some points in comparison with the plants exhibited in Philadelphia, of which we gave some account in our last. Following are some of the most prominent standards, grown in 10 and 12-inch pots, height of stem measured from surface of pot:—

"Empress of India—white; stock, 2 feet 9 inches; head of flowers, 2 feet 9 inches diameter. Hermione—yellow; stock, 2 feet 10 inches; head, 2 feet diameter. Duchess of Edinburgh—stock, 2 feet 10 inches; head, 2 feet; flesh colour. Mrs. Prindell—white; stock, 3 feet 6 inches; head, 2 feet diameter. Beauty—flesh; stock, 3 feet 6 inches; head, 2 feet. Venica—flesh; stock, 3 feet 6 inches; head, 2 feet 4 inches diameter; Fulgore—crimson; stock, 4 feet 6 inches; head, 2 feet 4 inches diameter. Orange Beauty—orange; stock, 2 feet 6 inches; head, 2 feet 6 inches diameter. Sir B. Seymour—orange; stock 2 feet 10 inches; head, 2 feet 6 inches diameter. Mrs. C. L. Allen—pink; stock, 3 feet; head, 3 feet diameter. Grandiflorum—yellow; stock, 2 feet 6 inches; head, 3 feet diameter. President Parkman—pink; stock, 3 feet; head, 3 feet diameter. California—yellow; stock, 2 feet; head, 3 feet diameter. Venus—pink; stock, 3 feet; head, 3 feet diameter."

GROS GUILLAUME GRAPE.

PERHAPS you will allow an eye-witness of Mr. McIndoe's system of growing this Grape to give confirmatory testimony. It has been my fortune of late to make extensive gardening tours, and what I have seen elsewhere proves conclusively to my mind that his system is the right one. His houses are lofty and broad span-roofed erections. The border next the path is about 2 feet 6 inches, and gradually deepens to a depth of 4 feet outside the house. Thus the roots are free to run both out and in. In his note he explains the distance apart of the Vines and the distance between the spurs, also the length he allows to the laterals. The result under his care is a heavy crop of enormous bunches. Mr. McIndoe does not take one or two giant bunches from a Vine, as sometimes is thought, but he cuts his show bunches from rods bearing as many bunches as those who do not show are wont to allow. The only fault I could find was that they were not forward enough to be in perfection for the autumn shows in Scotland, which eventually turned out the case, as Mr. Johnstone of Glamis nearly made the top score.

As may be judged from the distance apart of the laterals, a free play of light and air is given throughout the house. And to such a point does Mr. McIndoe insist on this item in culture, that the houses are kept open even in heavy thunderstorms, which can very well be done with the system of ventilation which has been provided for him by Messrs. Richardson of Darlington. Constant supplies of nutriment at regular intervals are given to the Vines. In the winter the border is slightly forked and a mulching applied, of which in August hardly a straw was visible. Finally, as an instance of the extraordinary vigour of these Vines, it was a fact that, however pinched, fresh growths were always visible in the month of August. In the same way Mr. McIndoe grows Mr. Thomson's Grapes, and with conspicuous success.—C. A. M. C.

In the last issue of the *Journal of Horticulture*, page 63, Mr. J. McIndoe has an article on late Grapes, which to me is very striking. The weight of Grapes he produces per rod is simply marvellous. I grow Lady Downe's Seedling for market; the Vines are planted similarly to Mr. McIndoe's in a span-roofed house, rods 4 feet apart and 15 feet long; but I do not produce quite half the weight of Grapes. It would be very

interesting to me, and doubtless to many more, if Mr. J. McIndoe will state more explicitly his treatment to both root and branch.

Mr. McIndoe warns all against overcrowding the foliage; but as I understand him his must be very crowded, as he takes seven laterals from each side of the rods and allows each lateral to extend 9 feet; if trained horizontally each Vine's laterals would run over two neighbours on each side, therefore each of his Vines makes about three times as much growth as Vines treated in the ordinary way. Does Mr. McIndoe train all his late Vines in the same way, and each variety carry from 70 to 90 lbs. of fruit as is stated per rod? Is each fruit-bearing lateral allowed to extend 9 feet before being stopped?—MARKET GARDENER.

NATIONAL AURICULA AND NATIONAL CARNATION AND PICOTEE SOCIETIES (SOUTHERN SECTION).

WRIGHT V. DODWELL.

MR. E. S. DODWELL having distributed a printed circular in which I was charged with committing a "fraud" in voting at the meeting held at South Kensington on December 9th, 1884, and further stating that I "never paid a subscription of any kind" to the Societies, he compelled me to take steps for the removal of that serious imputation; and as I was most reluctant to press unduly on an old florist, of whose work in raising and growing Carnations it has often been my duty and pleasure to write approvingly, he was requested by my solicitor to acknowledge the error into which he had been led, and I have received the following letter duly stamped as a legal document:—

"Stanley Road,
"Oxford,
"27th January, 1885.

"To
"Mr. J. Wright,
"Of the Journal of Horticulture,
"171, Fleet Street, E.C.

"I sincerely regret that through ignorance of the facts I characterised your having voted at the meetings of the National Auricula and National Carnation and Picotee Societies on December 9th, 1884, as a fraud in the printed circular which I wrote and issued to the members of these two Societies, and I now beg to apologise to you for the error I have thus committed, and I hereby withdraw any imputation upon your action on that occasion. I also agree to bear the expense of inserting this apology in three leading gardening papers, and to pay your solicitor's charges relating to this matter.—E. S. DODWELL."

I may remark that with the object of not imposing on Mr. Dodwell any expense that could be avoided, an advertisement in this Journal was not requested, nor was he desired to publish his letter of apology in circulars similar to those in which the libel was circulated, as with its insertion in four gardening papers I shall be quite satisfied. It may, perhaps, be well to add that in my little personal intercourse with Mr. Dodwell nothing has ever occurred to which I could take the slightest exception, and I have never had occasion to regard him with other than friendly feelings; and I am not conscious of ever having said or done anything to cause him pain until he forced me to do so in this case, which has certainly not been pleasant to me.—J. WRIGHT.



INTERNATIONAL POTATO EXHIBITION. — The trial culture of new seedling varieties entered for the International certificates will be carried out as in former years at Chiswick by the generous permission of the Royal Horticultural Society. Persons intending to enter seedlings for trial are requested to send not less than six tubers of each sort, with names and pedigrees, to the care of Mr. A. F. Barron, Royal Horticultural Gardens, Chiswick, before the 31st of March next.

— MR. FOLKARD'S new work, "PLANT LORE, LEGENDS, AND LYRICS," has, we hear, found favour with the Queen, who has graciously accepted a copy from the author. The book was reviewed in these columns last month. It is published by Sampson Low & Co.

— THE date of the REIGATE ROSE SHOW has been altered from Saturday, 4th July, to Thursday, 2nd July, it being found that several of the usual exhibitors wish to attend the Show at the Crystal Palace on the former date.

— THE next TAUNTON CHRYSANTHEMUM, FRUIT, AND PRIMULA SHOW is fixed to be held on Thursday the 19th November, 1885. The Hon. Secs. are Messrs. R. H. Poynter, The Nurseries, Taunton, and Jas. Wills, Middle Street, Taunton.

— AT Messrs. Protheroe & Morris's sale rooms, Cheapside, on

Friday last, a very fine variety of LÆLIA ANCEPS, with pure white sepals and petals, was sold to an eminent firm of nurserymen for ninety guineas. Imported and unflowered pieces of white Lælia anceps realised thirty-one guineas, seventeen guineas, and thirteen guineas respectively, and an established plant of Lælia elegans in flower sold for twenty-five guineas.

— "CHRYSANTHEMUMS AND THEIR CULTURE" was the title of an excellent lecture delivered at the Institution Hall, Yeovil, on Friday evening, by Mr. J. Bradner of Arley Hill Nursery, Bristol. There was a good attendance of gardeners, nurserymen, and amateur Chrysanthemum growers, Mr. Bradner being well known as a most successful exhibitor, and the winner of over a hundred prizes. The lecture, which was admirably delivered and warmly applauded, dealt with the Chrysanthemum in every stage of growth from the cutting to the exhibition stage. As Mr. Bradner has now given up competition, he freely gave his audience the full benefit of his long experience. At the request of those present, he consented to publish his lecture in pamphlet form, and has already arranged to do so, as will be seen by an advertisement in another column.

— CATTLE POISONED BY EATING YEW BRANCHES.—At Donington Park, Leicestershire, the seat of Lord Donington, last week about fifty beasts were turned into a large pasture, sheltered north and east by woods, and were well kept on hay and oilcake. One night they broke into a wood, the undergrowth of which is principally Yew. Of this they seem to have eaten freely. In the morning, when the stockman came, he found them lying about, many unable to move, and six were dead. The remainder were conveyed home, and under the care of a veterinary surgeon are recovering. The loss is a heavy one.

— A LITTLE work, entitled, "YE NARCISSUS, OR DAFFODYL FLOWRE, AND HYS ROOTS," has been recently issued by Messrs. P. Barr & Son, King Street, Covent Garden, and contains much interesting matter in reference to these popular flowers. A condensed history of the Narcissus is given, together with Mr. F. W. Burbidge's lecture read at the Daffodil Congress last year, and a descriptive list of all the varieties of Narcissus known in England, which is accompanied by numerous small illustrations, that have evidently been depicted by Mr. Burbidge's skilled hand. Two portraits of Parkinson are given, one when he was about sixty-two years of age, and the other when he was eighty. The work consists of forty-eight pages, the same size as Baker and Burbidge's "Monograph of the Narcissus," to which it forms a useful supplement.

— THE fifth annual general meeting of the ESSEX FIELD CLUB will take place at the Public Hall, Loughton, Essex, on Saturday evening, January 31st, 1885, at half-past six o'clock. The report of the Council for the year 1884 and the Treasurer's statement of accounts will be read and submitted to the meeting. The election of new members of the Council and officers for 1885 will also take place. By order of the Council the meeting will be a special one for the consideration of various alterations in, and additions to, the rules. An ordinary meeting will also be held solely for the proposal and election of new members. The President will deliver his annual address, which will mainly treat of "The Life and Work of John Ray, and their Relation to the Progress of Science." In order that the business of the ordinary meetings may terminate at an earlier hour, as a general rule, the chair will be taken in future at half-past six o'clock. It is hoped that this change will be convenient for members living at a distance.

— "H. N." writes as follows respecting PRIMULA PRINCESS OF WALES:—"This is one of the best varieties ever sent out. I received a packet of last season's seed from Messrs. Cannell & Sons last July, which produced seventy plants, intending to pot them or for spring blooming; but they grew so vigorously and flowered so very freely even in 4-inch pots that I could not resist the temptation to let them continue. It is a vigorous grower, having very fine healthy foliage, producing plenty of strong bold trusses of bloom thrown well above the foliage, of a lovely bluish white colour."

— MR. MANSFIELD MILTON, writing in the *American Gardeners' Monthly* respecting the PROPAGATION OF DOUBLE BOUARDIAS, observes:—"There is a general belief among many florists that to propagate Alfred Neuner and General Garfield Bouvardias, top cuttings have to be used in order to preserve their double qualities. That when propagated by

root cuttings they revert to the original single varieties, being what is termed 'bud sports.' This is incorrect. They can be propagated by root cuttings the same as any of the single kinds, and the flowers be just as double as when propagated by cuttings made from the shoots. Grown with plenty of light and heat the double kinds are grand acquisitions, but in a cool moist temperatnre they are apt to be decayed in the centre of the flower before the truss is nearly open."

— ROSE PERLE DES JARDINS.—Although a very beautiful Rose, the Maréchal Niel is no longer the yellow Rose of commerce. In looking through several large commercial Rose-growing establishments last summer I was surprised to find this once universal favourite so sparingly cultivated, and the few specimens I did meet with were retained, I think, more for propagating purposes than for blooms. The late Mr. Ellwanger, in his book of Roses, says, "the inexperienced would do better not to attempt its culture." The continued demand for plants of Maréchal Niel is largely due to the fact that buds of the Perle des Jardins are supplied to customers for Maréchal Niel by most of the city florists. For three monthly Roses there are no better varieties than Catherine Mermet, Niphotos, and Perle des Jardins. By all means plant in natural border, if possible, in preference to pot culture. If quick as well as satisfactory results are desired, a good plan would be to plant three plants of Solfaterre, a vigorous-growing Noisette, and bud with the varieties mentioned. Flowers from the budded plants will be larger and finer than on their own roots.—LEVANT COLE (in *Vick's Magazine*).

IN SCOTLAND.

SCONE PALACE.

FOLLOWING the course of the River Tay northward from Perth about two miles and a half one of the most classical estates in the district is reached—the famed historical Scone Palace, which has been for so many years the residence of the Earls of Mansfield. The Valley of the Tay in either direction from Perth is very beautiful, not perhaps of the typical northern character, but possessing that quiet charm imparted by tree-clad banks and verdant expanses of turf on each side of a broad handsome river, with the bolder features of higher elevations in the distance. In several places near the town the banks are dotted with neat suburban villas, but when the princely estate at Scone is approached we have a union of the natural attractions with numerous others created or developed by the art of the gardener.

Scone is particularly rich in trees, and within its policies are included many of the finest examples of their respective kinds to be seen in Scotland, and it is to these it owes much of its beauty. The history of the estate dates far back into ages, respecting which few records exist; but it appears probable that it was in the possession of the Pictish kings over one thousand years ago, and was then employed by them as their principal residence. It is, however, quite certain that until the thirteenth century Scone was a Royal palace and place of coronation for the rulers of the country, and that until an even later period Parliaments met there to transact business. The celebrated Stone of Destiny was long among the treasures of Scone, and was used as the seat of the kings at their coronation until it was transferred to Westminster, where it has been undisturbed since, and appears to have finished the travels it is said to have had. Tradition relates that it formed Jacob's pillow at Luz; that it passed thence to Syria, Egypt, Spain, and Ireland, and finally found a resting place at Scone. Some very unromantic people, however, assert that it was quarried in the neighbourhood of Perth. There was also an abbey at Scone at a very early period, but scarcely any traces of this remain. The present family have been the occupiers of Scone for many years, though the title Earl of Mansfield was not bestowed until the eighteenth century, and trace their lineage to one of the oldest families in Scotland, numerous members having held important posts, and taken a prominent part in public affairs.

The present Palace (fig. 16) is a noble and extensive building, well fitting the antiquities and glories of Scone. It is beautifully situated in a park of magnificent trees, many of which are monuments of past ages. Several of these are especial interest, particularly an old Cherry tree (seen at the left of the Palace in the woodcut), which is said to be the remains of an orchard attached to the Abbey. It is a large tree, but the upper portion seems dead, and very little vitality remains in the lower branches. The fruits are described as small and of little value, and Mr. McKinnon thinks it is one of the Gean varieties, which have been derived from *Cerasus avium*. The tree is a very interesting one, as it is unquestionably of great age. Another historical tree is Queen Mary's Sycamore (fig. 15, from Mr. Hunter's "Woods and Forests of Perthshire"). It is a fine specimen, over 60 feet high, and well developed, deriving its name from the fact that it was planted by Queen Mary. Numerous other deciduous and evergreen trees in the neighbourhood of the Palace are noticeable, the Oaks being uncommonly beautiful, while the choice exotic Conifers thrive as if they were in their native land.

THE PINETUM.

The collection of Conifers is an extremely large one, and the trees are nearly all of unusual size, and the majority are in the most vigorous health. *Abies Douglasii* is grandly represented by abundant specimens,

one which was raised from the first seed sent home by its discoverer, is now 75 feet high—a most remarkable memento of the unfortunate collector whose name it bears. David Douglas, to whom horticulturists owe so many valuable introductions, was a native of Scone, and served seven years' apprenticeship in the gardens attached to the Palace, there acquiring the preliminary knowledge of plants, which with his subsequent experience at Valleyfield and in the Glasgow Botanic Gardens enabled him to become collector for the London Horticultural Society. He undertook several journeys to America, and it was in that to the Columbia River in 1824 that the *Abies* named above was discovered together with *Pinus ponderosa* and *P. Lambertiana*. In the 1829 journey *Abies nobilis* and *A. Menziesi*, both fine species, were found with others, but it is the general opinion that the grandest of Douglas's introductions is *Abies nobilis*, and he says that though he spent three weeks in a forest composed of it he "day by day could not cease to admire it." It is unquestionably a handsome species, and in no garden have I seen so many fine examples of it as at Scone. There are several 40 to 50 feet high, but one of especial beauty is 64 feet high, surpassing the celebrated specimen at Highnam Court, Gloucester, which is 60 feet high. The Scone trees, too, are remarkable for their even development, and when this Conifer is seen in its prime its symmetry without any approach to the rigidity or formality of some species is very striking; the glaucous colour of the foliage is also an additional attraction, while the cones are unsurpassed in beauty by any of its relatives. *Abies Menziesi* is represented by several equally fine specimens; *A. Nordmanniana* and *A. Albertiana*, 30 to 40 feet high, are good trees; *Pinus Monticola*, 62 feet high, is believed



Fig. 15.—Queen Mary's Sycamore.

to be the best specimen of this Pine in Scotland; *Cupressus nutkaensis*, as I have already noted in other gardens, thrives well; Irish Yews are prosperous, and *Wellingtonias* grow vigorously; but *Deodars* are not quite satisfactory, and *Araucarias* occasionally suffer in severe winters. Some smaller plants of *Abies Engelmanni glauca* and *A. concolor* are very beautiful, especially the former, of which the glaucous tint is so marked, that it appears to have been silvered over the leaves. Amongst the deciduous trees some specimen Golden Ash 40 feet and more in height are extremely fine, while the Copper Beeches are of unrivalled beauty, an avenue being formed of them in one portion of the estate, and is probably unique. We might extend our wanderings amongst these trees with advantage, for they are numerous and beautiful in no ordinary degree; but the gardens demand a few notes, and to them we must now turn our attention.

FRUIT AND KITCHEN GARDEN.

Vines, Peaches, Nectarines, and Figs are the principal indoor fruits grown at Scone, and these are cultivated thoroughly, very large supplies of these fruits being produced from the several ranges devoted to them. Most of the houses have been erected in recent years upon the most approved modern principles, the borders having also been very carefully prepared. The Grapes are a strong feature, all the best varieties being included and most successfully treated. Black Hamburgh, Muscat of Alexandria, Gros Colman, Gros Guillaume, Alnwick Seedling, Lady Downe's, Alicante, and Mill Hill Hamburgh are the chief favourites; but Alnwick Seedling is not found to set very satisfactorily. Gros Colman was bearing some extremely large bunches and berries at the time of my visit; Lady Downe's and Alicante were also most promising and colouring superbly. Of Peaches, Lord Palmerston, Late Admirable, and Royal George had been bearing well, and still had some handsome fruits of great size, Grosse Mignonne being similarly fine, while Humboldt and Pitmaston Orange Nectarines bear freely and are much liked. The principal ranges are in divisions of 50 feet each; but there is one remarkable Peach and Fig house, 174 feet long, 9 feet wide, and 16 feet high at the back—a good structure, except that it is scarcely provided with sufficient means of

ventilation, an evil which Mr. McKinnon hopes to remedy. The Peaches and Nectarines are in pots along the front, the Figs being planted out and trained to the back wall. Two very large examples of the White Marseilles Fig are grown in this house, one covering a space of 36 by 16 feet, and the other, an extraordinary tree, is 40 feet long by the same height. The fruits produced by these trees are extremely large and handsome. The kitchen garden is four acres in extent, surrounded by walls 12 feet high, the soil being fertile and suiting most vegetables well. Peas in particular are very satisfactory; Veitch's Perfection apparently quite at home is found very reliable there, King of the Marrows and Ne Plus Ultra being similarly good. Small fruits thrive fairly well, but several Apples, including Lord Suffield, Cellini, and Stirling Castle are much subject to canker, which is attributed to the situation being somewhat damp, these varieties in the majority of other gardens which came under my notice being the most satisfactory in all respects, and Stirling Castle was especially so in a season when Apples were generally scarce. Apricots did not, however, form an exception, for outside against the walls they were in the best condition, healthy, clean, and bearing fine fruits, Moorpark being the favoured variety.

Miscellaneous plants are grown to supply flowers for cutting, but one is in particular demand—namely, Lilies of the Valley, of which a supply is maintained from Christmas to June. To effect this a large number of

could never allow my love to wander from those old favourites of my childhood. All flowers do not maintain their beauty alike; some are of short duration, others stand in the front for a generation. I have found flowers retain their growth and beauty longer which have a narrow short joint and grass; those with a broad fleshy flag grass and softwooded die out. Numbers of new varieties which have been sent out to eclipse Admiral Curzon and Lord Milton degenerated in a few years and became worthless; the worst I know of was a flower named Twitchett's Don John. The first year it created such a sensation that everyone was endeavouring to obtain it, taking all the prizes where exhibited, and the price advanced from 10s. per pair to £2 2s. per pair in 1842; but when it bloomed the next year Don John's character was such that even at Cambridge the raiser could scarcely own it, and something was said about four flowers being made up into one bloom. I thank Mr. Douglas for his good wishes, and I assure him and brother florists that defeat makes an Englishman the more energetic. I do like to meet better persons than myself in open competition. I trust I shall be pardoned when I state that had the premier bloom of rose flakes at Kensington, Jessica, been exhibited forty years past it would have been disqualified, having three petals distinctly marked as a crimson bizarre, a bizarre petal, in a flake as a flake petal in a bizarre were then considered a disqualification. As I consider myself now only a novice, I trust these remarks will be considered



Fig. 16.—SCONE PALACE.

roots are grown, an acre of ground being appropriated to the reserve stock. They are cut out in clumps about 2 feet square and placed in boxes for forcing as required, and when the flowers are all gathered they are returned their former position, which is well dressed with manure. They are allowed a year's rest, a good mulching being placed over the roots when the leaves die, and fresh strong plants can then always be obtained in quantity. Few houses are devoted to plants, but there is a well-furnished conservatory in which a good display is always maintained, and throughout the whole establishment there is the best evidence that the reputation Mr. A. McKinnon has gained as a careful practical gardener is well deserved.—LEWIS CASTLE.

OLD VARIETIES OF FLORISTS' FLOWERS.

MR. DOUGLAS'S reply to my inquiry, page 49, was intended to convey the question, Would our modern flowers, such as Wm. Skirving, Master Fred, Tim Bobbin, Jessica, &c., if grown in the days of Cartwright's Rainbow, Duchess of Devonshire, King Alfred, and Flora's Garland, have displaced the latter? Duchess of Devonshire and Rainbow were in petal, purity of white, depth of stripe, and equality of marking, all that could be desired. Lord Milton seems to have lost that brilliancy of colour where improving in size; Admiral Curzon has, however, improved in colour. Although I have not of late been an exhibitor I have grown a few, and

by the many practical growers who read them in a considerate manner.—THOMAS GARRATT.

P.S.—Wood's Agrippina was sent out fifty years past, and was the most brilliant white without bar in the petal, but its edging was as though Nature had put it on with a trembling hand. I consider that to be the parent from which most of the best Picotees have descended.

SINGLE ASTERS.

It is somewhat surprising that the single forms of the annual Aster should have received such little attention considering the great demand of late years for single flowers of the Marguerite type. Of the various seed catalogues that have reached me this season few offer seed of single varieties, which gives me the impression that they are not so well known as they ought to be. As flowers for cutting they are unsurpassed, and how I came to grow them was in this way. Looking round a neighbouring garden one October I noticed at a distance a bed that appeared particularly bright amidst the general dreariness prevailing at that period of the year. The seed had been purchased as superb double Asters, but produced a bed of singles, amongst which was one of a very bright rose pink colour. I prevailed upon the owner to save me the seed of that one, which he did. The first season of growing them there was a general variety of colours, but I carefully weeded out all except the pink ones, none of the others

being worth retaining. The result was, that last season we had a splendid bed of pink Asters that was admired by all who saw them. The double varieties were not noticed in comparison with the singles, and in these days when so many are on the look-out for something new they might fairly be considered a success. As cut flowers for decorative purposes they are quite unsurpassed; mixed with yellow Marguerites they produce a charming effect. There is little doubt that the German growers could send us plenty of varieties and colours if there was a demand for them, but we do not want the dingy colours found in so many of the double Asters. There is no reason why they should not stand in the same relation to double Asters that single Dahlias do to the double varieties. Their cultivation is the same as required for all Asters. I find the second week in April the best time to sow the seed. Then they grow vigorously without any check, and they produce seed more freely than double varieties.—H. N.

TEMPORARY HOTBEDS.

THE season having now arrived in which forcing of all kinds will be going on with great activity, the careful cultivator will often have his inventive powers put to the test in order to insure to everything that degree of warmth and shelter which is so essential to its well-being; for, in many cases, the number of frames and other conveniences are not sufficient for the requirements of the season, that some "makeshifts" have to be called into action, while, at the same time, every inch of glass is supposed to be hard at work as well. Now, though it would be idle to say that any substitute for a glass covering is as good as glass itself, yet many contrivances might be adopted which would either hasten on or shelter productions of a kind not too tender. For instance, Potatoes that were planted on a hotbed in December, might, by-and-by, have the frame taken away from them; the second crop especially might be made to dispense with such a luxury, and some framework of some kind or other erected which would admit of being covered up with some frost-proof material; while, at the same time, other beds might be made, and the Potatoes planted, which it would be unnecessary to humour with a glass covering at all if that material be wanted elsewhere.

Let us suppose that tree leaves, or dung, or both, exist in sufficient quantity to have a frame or two built with. Then, with this fermenting material, when in due order (according to directions so often given), let a sort of hotbed be made of any required length, but it had better not be more than 5 or 6 feet wide; the height of 3 feet will probably do at this season. When this is done, procure some deals or rough slabs, and fix them edge ways up all round the top of it, securing them at the corners to each other; and, if necessary, at one or two places in the middle; partition pins might be laid across, acting in the capacity of tie beams, by the sides being fastened to them. This being done, some contrivance must also be adopted with a view to support the covering that will be necessary to put upon this bed; one of the best being a waterproof oilcloth, or something that way, to support which a rail had better be carried along the centre, about 2 feet higher than the tops of these boards; this rail to be secured by posts driven into the bed, &c., and, if necessary, short pieces might be laid from the sides to it, in the manner of the rafters of a building, and it will easily be seen that over this, mats, or any other covering of that kind, might easily be thrown at any time.

From this it will easily be seen that a great amount of exposure must take place when light is wanted, consequently very tender products must not be expected to thrive here; but, in fact, such delicate plants as Cucumbers and many other tender seedlings ought to have some more suitable place; but as a succession of young Potatoes is no less necessary than Cucumbers, and a handful of Radishes a month or so before their natural season out of doors is often as much esteemed as a handful of flowers, it follows that any easy means of obtaining these must be worth the little labour they cost. Young Carrots, too, are esteemed a luxury at a season when the old ones are no longer palatable, and, by a similar contrivance to the above, their presence may be commanded some time before those in the open air come into use, and, what is equally important, in quite as good a condition as these are when of the same size.

If no preparations have been made by the amateur by the time these pages will reach him in the way of making such beds, no time must now be lost, and let the soil be at once put on, and the seed sown; or if for Potatoes, let them be planted. It is not much advantage to have them in the growing condition which they often are prior to putting into a frame closely covered with glass, for in this latter case the warmth and shelter afforded is sufficient to maintain them in that growing state in which they have been before their final planting; whereas, to take up Potatoes which have made some progress from a warm floor or bed and remove them out of doors to where the only heat they have is a little at the bottom, subjects them to a check, which throws them farther back than those not started at all. However, a little sprouting at the eyes will do no harm, and in planting such makeshift beds it is advisable to use larger Potatoes for seed than for outdoor planting generally.

When circumstances will admit of it, great advantage accrues from having the soil required for such beds in as dry and mellow a condition as possible; this may easily be effected when there are means for that purpose, as shed room, &c. It is also proper to observe that a very rich soil is not absolutely necessary for the purpose, although it must not be a poor or exhausted one, and for the Carrots a considerable quantity of sand or other opening matter ought to be added, for this root is not benefited by much dung or other enriching substance of that kind. Radishes may be treated more liberally, perhaps, but the principal agents of success are in other causes, and one of the most important is the total seclusion of

that cold harsh air so baneful to vegetation in the spring. If this can be accomplished without shutting out entirely light from the plant, then the object is gained; but as that cannot well be effected without glass, means must be taken to partially admit the light, while a part of the covering remains on, or rather while some temporary covering is taking the place of the principal one. Oiled calico will do better than a dark body, or paper similarly prepared will answer equally well, only it is not so durable, and requires a stretching frame or something that way to support it on; but these things will easily suggest themselves to the operator. Suffice it here to say, that anything that will admit the light and check the coldness of the atmosphere when the east wind is parching everything up, must be beneficial. Only let it be borne in mind, that in as far as Radishes are concerned, a larger space of full exposure must be made; otherwise the plant will be nothing but top, or, what is equally bad, a long useless neck. Carrots are more hardy, and as the seed is a long time in germinating it is not necessary for the bed to have much light during the early part of this process; however, they must have light before they make their appearance, otherwise they will lack that robust sturdiness so necessary to their well-being afterwards.

It is almost needless pointing out the many purposes to which such beds may be adapted. A patch of Cauliflower and Lettuce seed, sown in such a place, furnishes plants long before the same kinds could be had in the ordinary way of outdoor sowing; and it not unfrequently happens that the stock of autumn-sown of these things suffers much in a severe winter like the present; hence the necessity of replacing as many as possible. I may also observe that French Beans do very well on a bed so treated, only they must be somewhat later, as their tropical origin ill fits them to endure the cold blasts so common in our springs; but of this I may probably speak hereafter. Nevertheless, many things might be sown here which are wanted in small quantities; and a little later such a bed will be famous for raising annual flowers to plant out in the parterre and elsewhere; in fact, the uses of such a bed are manifold; and as the season is at hand wherein every inch of glass will be hard at work in the rearing and protecting things more tender or valuable, it behoves the careful cultivator to make the most of the means at his disposal. If the common objects can be effected in a homely way, the mode in which that is done reflects more credit upon him than when a more expensive system has been at work. As many residences in the vicinity of London can command hot stable dung in any quantity, and as many country places abound in leaves in an almost equally unlimitable extent, I advise each party to adopt a free use of each material. Whatever may be the merits of hot-water pipes and tanks, even when arranged in the most complete way, the day has not yet arrived when the old-fashioned dung bed has to be driven out of use. Though it would be unjust to affirm its produce in every respect came as early as that furnished by a well-regulated system of hot water or other mode of applying fire heat, yet it is much to be questioned whether any mode is more congenial to vegetation when that does show itself. The management of a plant when luxuriating in the genial warmth conveyed by well-prepared fermenting materials, is an easy matter when the top or foliage of the plant is allowed to partake likewise of its exhilarating influence; but in the description of rough half-exposed beds, which this chapter has been devoted to, the kindly influence of a genial heat has to be neutralised by frequent full exposures to an atmosphere not the most agreeable to vegetation in a dormant state, let alone that of a highly excited kind. Nevertheless this anomaly is partly got over by beginning in time, and a sort of sturdiness of top is attained when good management and attention are put in force.—J. N. R.

SWANLEY IN WINTER.

IN my little horticultural peregrinations I like to visit Swanley once a year. This year my visit happened to be in winter—a frosty day in January, not very severe, yet sufficiently so to make the ground crisp, necessitate rather sharp firing to maintain the requisite heat in the houses, and three or four thicknesses of mats to be placed on the cold frames for keeping the legions of sturdy young Chrysanthemums safe from injury. The occasion was opportune for observing at least one important feature of the establishment—namely, the heating apparatus in full working condition, and as the method adopted differs somewhat from that generally in use as to the arrangement of the hot-water pipes a brief reference to it may not be without interest to some readers of the Journal.

I had been told that Mr. Cannell heats his houses, or rather arranges the pipes, on a system that is "scientifically unsound," inasmuch as the proper way is to conduct the flow pipes with a gentle rise to the end of the house most distant from the boiler, from that point taking the return pipe with a corresponding descent either under the flow in a lean-to house, or down the other side if a span-roofed structure. That is the orthodox plan; but it is not exactly the method of arrangement adopted at Swanley. The flow pipe, of course, starts from the top of the boiler, but it is taken along the central path of the house, close by the side of the wall; in fact, it is as low as it can be placed, while the return pipe to the boiler is some 3 feet higher. The houses being span-roofed there are two flow pipes, one on each side the path, and two which are called "returns" suspended from the rafters a foot or so from the glass along each side of the structure back to the boiler. This is all wrong scientifically, I have heard; but have those persons who thus describe it examined closely? Have they taken care to observe that the pipes most distant from the boiler do not return to it with a gentle incline of, say, an inch in 20 feet, or so? The truth about the matter is this—the pipes rise from where they enter the houses nearest the boiler, and continue rising until they reach the same point back again, when the

pipe from the roof, ordinarily termed the "return," dips down vertically into the bottom of the boiler, or, what amounts to the same thing, into the main pipe in connection with it. Thus the water is flowing steadily upwards all round the houses; therefore, the whole may be termed "flow" pipes, the "return" being the few feet of vertical descent just referred to. If what is practically right cannot be scientifically wrong those scientists are out of it who disparage the Swanley method of heating.

There are, if I remember rightly, twenty-five span-roofed houses, each 100 feet long, in two blocks, and in all these, save one, that system of heating is in operation. There are also other houses still longer, so that altogether there will be 12,000 feet of piping arranged as indicated against 400 feet on the orthodox method. In the conduct of an establishment such as this it is essential to proceed in the most economical manner, and it is certain that Mr Cannell is not the man to waste coke in carrying out a fad; and it is equally certain that if he could save fuel and at the same time heat his structures efficiently by altering the pipes, he would very soon alter them, but the experience he has gained has justified him in altering in the other direction.

I never found houses better heated than those at Swanley with the same extent of piping. As a rule the two pipes along the path are 3-inch, and those conducted back along the roof about a foot from the base of the rafters are 2 inches in diameter. But this is not uniform, for in some instances the path pipes are 4-inch, and in others the roof pipes are 1½-inch; but one thing is certain, that for maintaining a genial and quite sufficient greenhouse temperature in which Zonal Pelargoniums flower through the winter, in which Primulas and Cyclamens luxuriate, and Bouvardias, winter-flowering Begonias, Salvias, with a host of other plants prosper, two 3-inch pipes, one on each side of the path and two 2-inch pipes conducted back along the roof are ample for the houses, one of which is figured in the "Floral Guide." In this engraving, however, four pipes are shown along the path, so that it might have been prepared before it was found that two were sufficient. There used to be two, and in some instances three pipes along the roof, but as they were not necessary they have been presumably removed and placed in other houses that are constantly being erected, and for the same reason and purpose some of the path pipes may have been removed too. The pipes are jointed with cement such as is used in buildings, and nothing can answer better, the water being heated in the sectional boiler devised by Mr. M. Cannell, and known as the "Circulator." Evidently it circulates to good purpose at home, for healthier plants no one could desire to see.

No attempt whatever will be made to detail the contents of the structures, and it must suffice to say that three or four of them are occupied with Primulas—splendid varieties admirably grown, the Swanley Blue being apparently as free as any, the whites long and pure, the reds deep, and the doubles massive. Some ranges are filled with Cyclamens, and resemble sheets of flowers; in others are Cinerarias, named varieties, just opening, and which will be grand by-and-by; some are ablaze with Zonal Pelargoniums, but passing, and the plants approaching the cutting-down and propagating period. I was just in time, however, to see one or two of the new varieties, and they are startlers. Mr. Cannell likes to measure the pipes of these flowers with his watch, which is no dainty, at least as to size, but a full-grown gardener's timepiece, and this laid on a flower of his namesake left quite a broad margin of crimson scarlet uncovered. It was certainly a grand flower, and quite as beautiful was the smooth clean rosy salmon Swanley Gem. W. E. Gumbleton, Kentish Fire, Lord Rosebery, Scarlet Cloth, with the double and single white varieties La Cygne and Queen of the Belgians are other claimants for public favour that cannot be overlooked. Then we find a huge clean healthy stock of new Ivy-leaved varieties, which Mr. Cannell considers show a greater advance in improvement than is found in any other section; one range we find filled with winter-flowering Begonias, the comparatively new form Carrieri being remarkable by its free growth and floriferousness, even small plants in 2-inch pots showing their precocity. This is one of the plants that sooner or later find their way everywhere, and it is destined to become very popular. Then we come to a house in which there is not much beauty, but is the richest, from a commercial point of view, on the premises, as it contains thousands of Tuberos Begonias, now being started, of the leading varieties in cultivation, and some that have not been seen by the public, but which are expected to cause a sensation some day. And so we might continue, but we will stop with a glance at the double Abutilon Thompsoni, now flowering, and the blooms are quite as good as they are represented in the "Guide." It is an American novelty, and as distinct in its way as the double Bouvardias, which also originated in that "great country."

Outdoors there is, perhaps, not much to refer to that is attractive, the flowers becoming limited to a few purple and yellow patches of Violas; but the few acres of these plants will be a sight to see in April onwards. The propagation is something to see now, both as regards extent and simplicity. It is quite in accordance with fact to state that hundreds of thousands of plants are being raised, and where they can all go to is a marvel. There they are, however, and if they were not wanted they would not be provided. The 4 feet wide beds are quite in the open, the surfaces being fine, smooth, and firm. With a board across the cuttings are inserted in rows precisely as a man would prick out so many Cabbage plants. They are watered, but not shaded, and few indeed fail to grow. These Viola cutting are 2 or 3 inches in length, but only just the apex of each is left above the surface. The difficulty, says the owner of them, is to get people to insert them deep enough and firm enough. Cuttings are still being put in, and if the work is done properly not one out of a hundred is

expected to fail. The named varieties of Pansies are struck in beds surrounded with boards on edge, so that a little protection can be afforded in some form or other if it should be required.

About equally astonishing by their numbers are the seedling Primroses and Polyanthuses. "What in the world are you going to do with them all?" asked a gentleman who was impressed by the sight. "Well, you see, I like them, and so do a great many others, and as they do well here we go in for them rather largely." These seedlings are like so many sturdy winter Lettuce plants, but not planted on the level; they are in hollow trenches for two reasons. First the intervening ridges afford effective shelter from cutting winds in winter and early spring; and secondly, when the ground is hoed over the soil gradually works down, covering the roots deeper and deeper, thus making the plants safe against the effect of drought in summer. Deep digging and deep planting is the rule here, and the plants grow like Cabbages.

In another part of the grounds are Roses, which grow remarkably well in this generous Kentish loam. The men were busy amongst them clearing out those large enough, and planting cuttings, Briar cuttings, for raising a further supply. Having tried all sorts of stocks, Mr. Cannell finds none better than these, and none are more easily raised. The cuttings are made from the lateral growths of the standards, in which buds were inserted in the summer. Usually these prunings are wasted, but selected portions of them, divested of their lower buds and inserted like Gooseberry cuttings, root quite freely, those put in now being ready for grafting under glass at this time next year, and for budding *in situ* during the following summer.

An acre or two of frames invite a peep under some of the lights. One block of 800 feet run contains Pelargoniums and such-like tender plants, frost being excluded by two rows of 1-inch pipes not far from the roof. A similar block, not heated, is filled with Carnations and Picotees in 3-inch pots—an immense stock. Just a word on the construction of these plant receptacles, as it is not easy to imagine any cheaper and better adapted for the purpose. Drive into the ground two rows of creosoted 2 or 2½-inch battens as the outer basis of the framework, and at the right height and distance for supporting the rafters. Along the back row nail some 13-inch deals on edge, and from the top of these to the lights that rest on the framework have a board affixed on hinges, to fall down when open the entire length of the range. Cover the front similarly, but of course not so high, and when the lights are placed on and the lids are down the plants are close to the glass, dry, yet with a constant circulation of air passing through, which keeps them sturdy and free from spot and mildew. With the boards creosoted these ranges, which cost so little, would last for years, and be invaluable in gardens for many purposes besides wintering Carnations and Auriculas.

Another block, range after range, is filled with sturdy young plants of Chrysanthemums. The number is quite too bewildering to be even guessed at. The cuttings are not allowed to have a smell of fire heat, but frost is excluded by covering the glass. A specialist is wholly employed in this department of the business, and stock of sturdy young plants and steadily rooting cuttings do him credit. "If you want to spoil Chrysanthemums," says Mr. Cannell, "strike the cuttings in bottom heat, and all that sort of thing; but if you want to grow them strike them and keep them in frames, letting them have all the air they will endure, protecting only to exclude frost." That is what is preached and practised at Swanley, and the hint may perhaps be useful to beginners in the culture of these increasingly popular flowers.

After passing through the bulb stores, package-box stores, manure stores, and other ins and outs of the nursery, we rushed to the station, but had just time to look over the fence of Mr. Philip Ladd's new venture for fruit-growing. He commenced with 30 tons of glass, and already there is one fine house 650 feet long by perhaps 18 feet or 20 feet wide, and about forty-five other span-roofs each 200 feet long. A few more acres remain to be covered, with 21 additional acres in another locality. This remarkable man laughs at foreign competition, and such is his energy that we should not be surprised by his establishing depôts in London and the principal cities and towns of the kingdom for the sale of his own produce, thus turning the tables on the middleman, who stands like an ogre between producer and consumer. There is indeed no telling what Mr. Ladd will do, as his acts are in advance of the ideas of most persons. What he has accomplished is known, and is marvellous, especially when it is not so many years since he started with a few Fuchsia stumps, struck cuttings from them, tied each little plant in a bit of moss, carried them in baskets and sold them for 1d. each to the workmen as they streamed out of the gates of the Woolwich Arsenal. That was, I am told, the small, real commencement of what will soon become, if it is not already, the greatest business of its kind in the world. Enough has now perhaps been said about Swanley in winter by—AN ANNUAL VISITOR.

ON JUDGING ROSES.

WILL you permit me to reply in a few words to your correspondent, "Francisco," who advocates that the system of judging at the National Rose Society's exhibitions should be applied to all Rose shows—viz., selecting the Judges from the exhibitors. He is wrong, I think, in considering that the Society adopts that as the best system; it only does so because no other is possible. The size of the exhibition, the very large number of classes, and the shortness of time allowed for judging compels them to adopt a system in which there is much that might be better. I believe they would consider it much better to have Judges who are in no way concerned in the exhibition, and who could give their undivided attention to their work; but that is quite impossible, for almost every

Judge who could be regarded as really efficient is an exhibitor, and they are *faute de mieux* compelled to adopt this. If it is asked why there should be any objection, the reply is simply that the Judges, occupied with their own exhibits, are difficult to get together at the proper time, and do not come as fresh to their work as is desirable; but it has worked fairly well. It is, however, to my mind quite inapplicable to small shows, where the exhibits are confined to few classes and are all comprised in one room or tent, where, if the Judges were selected from the exhibitors, they would previously have had the opportunity of seeing all the Roses in the room, and who the exhibitors were. It is impossible, knowing what human nature is, but that in some instances opinions had been already formed before they commenced judging, which might influence their decision; but even supposing this not to be the case, we have to consider the exhibitors themselves, who would, when defeated, in many instances attribute it to the Judges knowing the flowers and to whom they belonged.

I do not speak upon mere surmise, but on what I know in many instances to have been the case, and therefore it is a wholesome rule in many Societies that the Judges shall not enter the place of exhibition until the tent is cleared of exhibitors; indeed I have known where in one instance it was objected to a Judge that he had stayed the night before the show with one of the exhibitors. Judges, like Cæsar's wife, ought to be above suspicion, nor should any loophole be left to justify any complaint of partiality. Nothing, I am quite sure, gives more confidence to exhibitors than the selection of Judges who are utter strangers to the place, and who have never seen or know anything of the exhibits before they enter the place where their duties are to be carried out; he may be thought to have made mistakes, but no shadow of a doubt is there on his impartiality. For these reasons I think that while the National Rose Society's system may be fairly adopted at such large shows as Bath or Darlington, it is quite inapplicable to the many smaller shows which are now held in all parts of the country.—D.

PREPARING COMPOSTS.

OFTEN it is very difficult to obtain fresh turf or soil for garden purposes, especially for potting and growing the best crops or plants in hotbeds, &c. The possessors of gardens and parks often look upon surface turf as if it were the finest gold. I can well enter into their feelings in this respect. Getting the top spit of a rich old pasture, so much alluded to for borders and other purposes by old gardening authors, is all very well, and the gardener who is allowed to dip at pleasure into such a rich store may consider himself very fortunate. In some extensive parks a sort of custom has been established that the gardener may clear a portion of some not-much-scen part of the park every year, leaving the surface rough and open, and sowing afresh with Grass seeds. Wherever he can do this, he ought to feel grateful. I have never had the pleasure of thus resorting to park or common, where the most valuable close fibrous material could easily be obtained, but when planting a fresh piece of cover, or making alterations, I have always been on the outlook for good loamy fibrous turf, and when all else failed I went to the lanes, highways, and hedgerows for fresh material.

In these frosty days I have collected a quantity from the grassy material by the sides of some old hedgerows that had been grubbed-up, and the turfy grassy matter that was removed before ploughing. This material was none the worse of having bramble and other roots, and small shrubs along with it. Such clearings would be valuable if merely thrown together in a large heap, but their value is greatly increased if neatly built in long oblong stacks—say 4, 5, or more feet wide, the grass side mostly downwards. Such a stack, say 50 feet in length (or as short as you choose to make it), 4 feet wide, 5 feet high at the sides, and then rising with a hipped roof to a ridge some 2½ to 3 feet more, will afford a large amount of valuable soil for potting, &c., and will be very sweet, mellow, and full of fibre a twelvemonth or less afterwards. I should have liked this rough turf to be a little drier, but its wetness after the rain would be considerably neutralised by the length of the withered grass, &c., which would tend to keep the whole open, and thus partially admit a circulation of air. In this respect I prefer that the width of the regular-formed heap should not be more than 4 feet, as the object is to have the heap of soil thoroughly sweet and mellow without much loss or decomposition of the fibre. To secure this object when the heaps were wider, I have run drain tiles or small faggots through them in different places, so that the dry, warm, sweet air should pass through without wasting the fibre of the soil. The hipped roof, firmly beaten, will keep the heap dry, as the outside will soon become green, but when I wish to be particular I have each side of the span-roofed heap thatched with turf, grass side outwards, fastening the turf with pegs.

I make no apology for entering into these details, as the texture and the condition of the soil we use, especially for potting plants, have a very great effect on future success, and every reader, who for such purposes may use only a few barrowloads of soil, may as well have it in the best possible condition as not. Such a heap will always enable one to have soil suitable as to dryness at any time. It is always easy to damp soil where water is to be had. Such soil is also more easily warmed than if wet, close, and decomposed. The heaps just formed are not so good in material and full of fibre as I could have wished, but they will be tolerably good from six to twelve months hence. I have a quantity in a heap made a twelvemonth ago, placed in stokeholes and under benches, ready for potting, and it is a treat to smell and handle it. Much of it will have to be torn to pieces by the hand, it is so full of fibre. With a little sand and sweet rotten dung anything may be done with such soil for general purposes. Heath peat soil will be required for fine hair-rooted plants, and even for them many pieces of this sweet fibrous turfy loam would be useful—a matter of importance in many parts where heath soil is scarce and expensive. It is difficult to be procured in this quarter, even at the price of £2 for a very small one-horse load, and often a great part of that is rough fibre fit only for drainage.

I have often advised those who want soil for their window plants and little pet greenhouses to obtain rather sandy fresh loam from the sides of

roads, and I see no reason to retract the advice. If they can procure as much beforehand from thence or elsewhere as will amount to a load or two, or some barrowloads of turf, pile it up as stated above, and let it stand for a season, they would have a very superior compost. Any sort of loamy turf is better than none, but if I could go where I liked I would pass by all the turf that produced fine, soft, broad-leaved grass, and cut into that where the herbage was individually small and wiry, more resembling needles, or the foliage of a Pine tree, than blades of grass. I can see any day two hundred acres of such turf over the finest loam, and if you take that up from 2 inches thick it is such a mass of fibres that it is next to impossible to tear it to pieces. Material of this kind, carefully stacked for a twelvemonth, becomes one of the securities for fine growth in the case of plants in pots.

With such a heap to fall back upon as the main part of all his composts, the amateur and the regular professional alike may make themselves perfectly easy as to the complex composts that formed so prominent a part in old gardening literature, this plant requiring ten and the other plant some twenty ingredients, and all to be mixed and turned, and turned ever so often before use, until what was really good had nearly been dissipated into the general atmosphere, and what was left was a close unctuous mass that required much more care in watering, &c. With such a heap, sweet and mellow, but with the fibre unexhausted, I want to make no composts until I want to pot, and then I am satisfied with a very simple compost indeed, instead of one that would require a note-book to refer to, lest the best memory should forget a number of the constituent parts. The simpler and the sweeter the compost the better will the plants thrive. When the pots will admit of it, if the compost is moderately rough all the better. For instance, for a 5-inch pot I would not object to many pieces of this sweet turf as large as beans. For a 10-inch-pot I would not object to pieces as large as walnuts or chestnuts. For all particular purposes I would tear the material with the hand, and not break it up with the spade. A rough open sieve is only used in the case of small plants: When the soil is fine from want of fibre, in addition to the other materials of the compost, as sand and sweet leaf mould, broken charcoal in bits, but from which the dust is excluded, will also be useful for keeping the soil open and regulating drainage.

Where neither the sides of a road, nor the turf there, can be obtained, a very good compost for the general run of pot plants may easily be collected from a ridged-up garden or a ploughed field by taking the flaky soil on the surface during a dry day in March or April, and keeping it for use. I have scraped up this sweet thin layer with my hands, or with a trowel, into a basket or a barrow, and by keeping it in an open, dry, exposed place it answered admirably for the generality of pot plants, such as are grown in windows and small greenhouses. Hardly anything would answer better, even for a Cucumber or a Melon bed. The little additional care bestowed in procuring material will be anything but labour lost. Attention to such details is the first essential to success. For instance, in summer, soil of the description referred to may be used at once with no previous preparation. Now, and for months to come, it should be exposed to the air, and slightly warmed before being used for growing plants. Not long ago I saw stubby Zonal Pelargoniums, with balls full of roots, in 5-inch pots transferred to 6-inch pots, but the plants had been standing in a temperature averaging 50°, and the soil would scarcely have averaged 35°. What a check this would give at once, and still more if cold water was used for watering! How much more would the roots have relished soil at from 50° to 60°, and water at from 60° to 70°, and they would then have been able without check to have pushed into the fresh soil.—F. R.

EPIPHYLLUMS.

THERE are few decorative plants at the present dull season that can rival the Epiphyllums for the profusion and brilliancy of their flowers. They are of a graceful drooping habit, and either on their own roots or grafted as standards on the Pereskia, or pyramids on *Cereus speciosissimus*, they are very useful for a variety of purposes. Standards with stems 18 inches or 2 feet high are useful for arranging amongst dwarf plants such as Cyclamens, Primulas, &c., as they stand above them and break the formality of the arrangement. They are also useful as table plants, or for vases, surrounded by Ferns or other foliage plants.

My experience has been chiefly with those on their own roots, and to this mode of cultivation I would direct attention on the present occasion. Nothing can be simpler than their requirements. During March or April is the best time to strike cuttings. Large pieces are put into 60-size pots and tied to a stake, using a compost of turfy loam, peat, a little leaf mould, and a good dash of silver sand. They are watered through a rose, plunged to the rim in a box, using leaf mould, cocoa-nut fibre or moss, and placed on the pipes in a vinery, where they will soon root. Keep the plunging material moist, and the cuttings will require very little water till they are rooted. Care should also be taken that they do not have too much moisture while syringing. When they are rooted they may be taken out of the plunging material, and each pot placed inside one a size larger, and stood on a shelf in the same house, where they will be shaded from bright sun. There they may remain till they have finished growing, which will be about the middle of August, when they should be gradually exposed to more light and a cooler atmosphere, such as an early vinery or Peach house from which the fruit has been cleared. During the autumn months a late vinery is a very good place for them, the temperature suits them, and the little water they require does no harm. These small plants are very handy

for small vases, and what can be more charming for a front row for the conservatory when arranged alternately with fresh plants of *Isolepis gracilis*? When larger plants are desired in a short time put four or five cuttings into a 4½-inch pot, and treat them in the same way, and they will make fine plants well furnished with bloom ten months from the time of potting.

The plants must be rested for a few weeks after flowering. About the beginning of March they may be placed in a stove or vinery, and when they show signs of growth they should receive a shift, but not a large one, those in 60's into 4½, and the larger into 5 or 6-inch pots. Be sure the soil is moist at the time of potting, also the compost, and ram the soil round the roots as firmly as possible. Sprinkle slightly with the syringe, and withhold water at the roots for the first week or ten days, and water carefully until the roots are well through the fresh soil. When the pots are filled with roots we give liberal, though not too frequent waterings, giving them weak liquid manure once a week. As the days grow shorter less frequent waterings will be required, but they should by no means be allowed to become dry, and as the flower buds commence swelling the plants should have weak liquid manure each time they are watered. A temperature of 50° to 55° is suitable; in a warmer house the flowers are not of such a brilliant colour, nor do they last so long.

Epiphyllums can be grown to a good size in very small pots, which is of advantage in plants for furnishing vases or baskets. We have some plants put in as described above in the spring of 1881, and they are now 2 feet 6 inches in diameter, and only in 6-inch pots. To see plants of this size to advantage they must be suspended in baskets, and for furnishing these at this season there is nothing can equal them.

In cultivating these on their own roots I think it wise to strike a few every year. Young plants are extremely useful, and young growing plants are far better than old ones. One point more, and I think it is not unimportant. We always keep them in two pots—that is, we drop the pot in which the plant is growing into one a size larger. This keeps the roots in a moist state with less frequent watering, and prevents the small pots falling over with the weight of the plants. They are extremely impatient of stagnant water at the roots, therefore an important point is to see that the drainage is at all times good.—R. INGLIS.

ROYAL METEOROLOGICAL SOCIETY.

THE annual general meeting of this Society was held on Wednesday evening, the 21st inst., at the Institution of Civil Engineers, Mr. R. H. Scott, F.R.S., President, in the chair. The Secretary read the report of the Council, which showed the Society to be in a very satisfactory condition. The Council equipped a typical climatological station in the grounds of the International Health Exhibition, in order that persons desirous of organising a station might see one arranged in accordance with the regulations of the Society. A conference on meteorology in relation to health was arranged for by the Society, and held at the Health Exhibition on July 17th and 18th. The Council have appointed committees to investigate the subjects of the brilliant sunrises and sunsets of 1883-4, and of the local phenomenon known as the Helm Wind of Cross Fell, Cumberland. The observing stations of the Society now number eighty-five, the results from which are printed in the "Meteorological Record." The whole of the stations in the south of England have been inspected during the year and found to be generally in a satisfactory state. The number of Fellows on the roll of the Society is 552, of whom thirty-seven were elected in 1884.

The President, Mr. R. H. Scott, then delivered his address, in which he stated his intention to treat of the general state of the science of meteorology over the globe, as compared with the programme sketched out by Professor James Forbes in the Report of the British Association, 1840. He said there were now six meteorological societies publishing journals, and in addition six periodicals almost exclusively devoted to the science. He went on to say, "With all this wealth of literature there is one particular in which, in this country at least, our science labours under a great disadvantage. So far as I am aware no instruction is given in it except at the Royal Naval College, Greenwich. In Germany, in the current half year, no less than eleven courses of lectures are announced at as many universities or high schools." Mr. Scott exhibited a large map showing all the observing stations over the globe, and also the distribution of information as to ocean meteorology as contained in the Meteorological Office. He then alluded to the different classes of observations proposed by Professor Forbes for different classes of stations, and the degree to which his suggestions had been carried out. The next subject was the attempts which have been made by balloon ascents, mountain stations, &c., to gain a knowledge of the condition of the upper atmosphere, and Mr. Scott stated that on inquiry from the various foreign institutions which possessed affiliated mountain stations he had found that, except in the case of Mount Washington, none of the observations were practically much used in forecasting. No telegrams are received from Pike's Peak. In one particular all authorities are agreed that no one has yet suggested any mode in which the barometrical readings could be used, owing mainly to the uncertainty about their reductions to sea level from great heights. Mr. Scott concluded his address with a notice of the important work by Padre Vines, S.J., of the Havannah, on the West Indian hurricanes of 1876 and 1877.

The following gentlemen were elected the officers and Council for the ensuing year:—

President,—Robert Henry Scott, M.A., F.R.S., F.G.S. Vice-Presidents—William Morris Beaufort, F.R.A.S., F.R.G.S.; John Knox Laughton, M.A.,

F.R.A.S., F.R.G.S.; Edward Mawley, F.R.H.S.; Charles Theodore Williams, M.A., M.D., F.R.C.P. Treasurer—Henry Perigal, F.R.A.S. Trustees—Hon. Francis Albert Rollo Russell, M.A.; Stephen William Silver, F.R.G.S. Secretaries—George James Symons, F.R.S.; John William Tripe, M.D., M.R.C.P.Ed. Foreign Secretary—George Mathews Whipple, B.Sc., F.R.A.S. Council—Edmund Douglas Archibald, M.A.; George Chatterton, M.A., M.Inst.C.E.; John Sanford Dyason, F.R.G.S.; Henry Storke Eaton, M.A.; William Ellis, F.R.A.S.; Charles Harding; Richard Inwards, F.R.A.S.; Baldwin Latham, M.Inst.C.E., F.G.S.; Robert John Lecky, F.R.A.S.; William Marcet, M.D., F.R.S., F.C.S.; Cuthbert Edgar Peek, M.A., F.R.A.S., F.R.G.S.; Capt. Henry Toynbee, F.R.A.S.

ACACIA LONGIFOLIA.

ACACIAS are amongst the easiest grown and brightest of hardwooded spring and summer-flowering plants. They are well adapted for cultivation in pots, where the plants flower profusely when in a small state, and they are equally suitable for planting out in conservatories where they form large bushes or trees, which in early summer are laden with golden flowers, rendering them both elegant and bright.

The genus comprises an immense number of species, all of which are more or less desirable stove and greenhouse decorative plants. The greenhouse species are the most generally useful and the most commonly cultivated, as the plants in pots can be grown out of doors in the summer



Fig. 17.—*Acacia longifolia*.

months, where they require a minimum amount of care to preserve them in health, and when removed under glass they expand their thousands of flowers freely. For affording cut flowers Acacias are extremely useful, as, especially when planted out, the plants may be cut to almost any extent, and, in fact, are benefited by the operation. A plant of the above-named species planted in the bed of a conservatory has yielded me armfuls of golden sprays, which have been valued for their slender elegance and cheerful colour. It is by no means the most handsome of the genus, yet of its usefulness I have had many proofs. Others of the most attractive of this large family which are especially worthy of culture are *armata*, which flowers freely even when only a few inches high, and may be forced into flower in midwinter; *floribunda*, *grandis*, *dealbata*, *spectabilis*, *verticillata*, *Hugelii*, *falcata*, and *longissima*.

Plants are easily raised from cuttings, which mode is preferable if dwarf flowering plants are required, but seedlings grow more rapidly, and also flower freely, if the shoots are well matured by exposure to the summer's sun. The plants grow freely in a mixture of loam and peat, and are seldom injured by insects.—J. W. B.

COMMITTEES OF THE ROYAL HORTICULTURAL SOCIETY FOR 1885.

THE following are the names of the members of the three Committees of the above Society nominated for the ensuing year.

SCIENTIFIC COMMITTEE, 1885.

CHAIRMAN.

Sir Joseph Dalton Hooker, K.C.S.I., M.D., C.B., F.R.S., V.P.L.S., Royal Gardens, Kew.

VICE-CHAIRMEN.

Rev. M. J. Berkeley, F.R.S., Sibbertoft, Market Harborough.
Dr. Michael Foster, F.R.S., Shelford, Cambridge.
Grote, Arthur, F.L.S., 42, Ovington Square, S.W.

SECRETARY.

Rev. G. Henslow, F.L.S., F.G.S., Drayton House, Ealing.

Baker, J. G., Royal Herbarium, Kew.
Balfour, Professor I. Bayley, Hillhead, Glasgow.
Beddome, Colonel, Sispara, West Hill, Putney, S.W.
Bennett, Alfred W., M.A., B.Sc., F.L.S., 6, Park Village East, Ealing.
Boulger, G. S., 9, Norfolk Terrace, Bayswater, W.
Burbidge, F. W., Trinity College Gardens, Dublin.
Church, A. H., F.C.S., Royston House, Kew.
Clarke, Col. R. Trevor, Welton Place, Daventry.
Glaisher, James, F.R.S., Dartmouth Place, Blackheath.
Houston, D., F.L.S., 179, Mayall Road, Herne Hill, S.E.
Loder, Edmund Giles, Floore, Weedon, Northamptonshire.
Lowe, Dr. Wm. Hy., Woodcote, Inner Park Road, Wimbledon.
Llewelyn, J. T. D., F.L.S., Penllergare, Swansea.

Lynch R. Irwin, A.L.S., Botanic Gardens, Cambridge.
Masters, Maxwell T., M.D., F.R.S., Mount Avenue, Ealing, W.
McLauchlan, R., F.R.S., Lime Grove, Lewisham.
Michael, Albert D., Cadogan Mansions, Sloane Square, S.W.
Moore, Thos., F.L.S., Botanic Gardens, Chelsea, S.W.
Murray, G., Natural History Museum, South Kensington, S.W.
Paseo, F. P., F.L.S., 1, Burlington Road, Westbourne Park, W.
Plowright, C., 7, King Street, King's Lynn.
Ridley, Henry N., B.A., Natural History Museum, South Kensington, W.
Smea, A. H., The Grange, Wallington, Surrey.
Smith, Worthington G., F.L.S., 38, Kyverdale Road, Stoke Newington, N.
Wilson, A. Stephen, North Kinmundy, Summerhill, Aberdeen.

FRUIT COMMITTEE.

CHAIRMAN.

F. Du Cane Godman, F.R.S., 10, Chandos Street, Cavendish Square, W.

VICE-CHAIRMEN.

H. J. Veitch, F.L.S., Royal Exotic Nursery, Chelsea, W.
John E. Lane, Berkhamstead.
R. D. Blackmore, Teddington.

SECRETARY.

Archibald F. Barron, Royal Horticultural Society, Chiswick, W.

Bunyard, George, The Old Nurseries, Maidstone.
Burnett, J., The Gardens, Deepdene, Dorking.
Denning, W., The Gardens, Londesborough Lodge, Norbiton, Surrey.
Ellam, Joseph, The Gardens, Cliveden, Maidenhead.
Ford, Sidney, The Gardens, Leonardslee, Horsham.
Goldsmith, G., The Gardens, Hollenden, Tunbridge.
Haywood, T. B., Woodhatch Lodge, Reigate.
Hogg, Robert, LL.D., F.L.S., 99, St. George's Road, S.W.
Hower ft, Anthony, 14, Tavistock Row, W.C.O.
Lee, John, 78, Warwick Gardens, W.
Lyon, S., The Gardens, Sundridge Park, Bromley.
Mason, Major F., The Firs, Warwick.
Miles, George T., The Gardens, Wyeombe Abbey, High Wycombe.

Paul, George, The Old Nurseries, Cheshunt, Herts.
Paul, William, Waltham Cross, N.
Rivers, T. F., Sawbridgeworth.
Roberts, J., The Gardens, Gunnersbury Park, Acton.
Ross, Chas., The Gardens, Welford Park, Newbury.
Rutland, F., The Gardens, Goodwood, Chichester.
Sheppard, J., The Gardens, Wolverston Park, Ipswich.
Silverlock, Charles, 413, Strand, W.C.
Sutton, Arthur W., Reading.
Webb, Henry, Redstone Manor House, Redhill.
Weir, Harrison, Henwick Lodge, Lansdown Road, Tunbridge Wells.
Willard, Jesse, Holly Lodge Gardens, Highgate, N.
Woodbridge, John, The Gardens, Syon House, Brentford, W.

FLORAL COMMITTEE.

CHAIRMAN.

Geo. F. Wilson, F.R.S., Heatherbank, Weybridge Heath.

VICE-CHAIRMEN.

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John Fraser, Lea Bridge Road Nursery, Leyton,
Shirley Hibberd, 1, Priory Road, The Green, Kew.

SECRETARY.

Archibald F. Barron, Royal Horticultural Society, Chiswick, W.

Baines, Thomas, Fern Cottage, Palmers Green, N.
Ballantine, H., The Dell Gardens, Egham.
Bealby, William, The Laurels, Roehampton Park, Putney Heath, S.W.
Bennett, H., Shepperton.
Cannell, Henry, Swanley.
Child, James, The Gardens, Gurbrand Hall, Ewell.
Dominy, John, 11, Tadema Road, Chelsea, S.W.
Douglas, J., The Gardens, Great Gearies, Ilford, E.
Duffield, G., The Gardens, Bamford Lodge, Winchmore Hill, W.
Herbst, H., Kew Nursery, Richmond, Surrey.
Hill, E., The Gardens, Tring Park, Tring.
Hudson, James, The Gardens, Gunnersbury House, Acton.
James, J., Woodside, Farnham Royal, Slough.

Kellook, W. B., F.L.S., Stamford Hill, N.
Kinghorn, F. R., Sheen Nursery, Richmond, Surrey.
Laing, John, Stanstead Park, Forest Hill, S.E.
Llewelyn, J. T. D., F.L.S., Penllergare, Swansea.
Noble, C., Sunningdale Nursery, Bagshot.
O'Brien, James, West Street, Harrow-on-the-Hill.
Perry, Amos Isaac, Stamford Road, Page Green, Tottenham.
Pollett, H. M., Fann Street, Aldersgate, E.C.
Smith, J., The Gardens, Mentmore, Leighton Buzzard.
Turner, Harry, Royal Nursery, Slough.
Walker, J., Whitton, Middlesex.
Wilks, Revd. W., Shirley Viearage, near Croydon.
Williams, Henry, Victoria Nursery, Upper Holloway.

ON RAPID CHANGES IN THE HISTORY OF SPECIES.

At a recent meeting of the Academy of Natural Sciences of Philadelphia Mr. Thomas Meehan exhibited flowers of a remarkable *Halesia*, and remarked on the wide divergence reached without any intervening modifications from the original, and observed that it was another illustration of what he thought must now be generally accepted, that the maxim of Ray, *Natura non facit saltum*, itself needed modification. He had called attention to this particular departure among others in a paper before the American Association for the Advancement of Science in 1874. What he desired to do now was to emphasise a few of the points brought out prominently in that paper, that "variations in species, as in morphological changes in individuals, are by no means by gradual modifications—that suddenly formed and marked variations perpetuate themselves from seed and behave in all respects as acknowledged species, and that variations of similar character would appear at times in widely separated localities."

In addition to the illustrations given in that paper a remarkable one was afforded by the *Richardia æthiopica*, the common *Calla* of gardens, the present season. Some 4 inches below the perfect flower a mere spathe was developed, partially green, but mostly white as usual; but in this case we do not call it a spathe, but a huge bract. In other words the usually naked flower scape of the *Richardia* had borne a bract. Flowers with a pair of more or less imperfect spathes were not uncommon in some seasons. The peculiarity of the present season was the interval of several inches on the stem, which justified the term of bract to the lower spathe. From the vicinity of Philadelphia numbers had been brought to him, and others had been sent from Ohio, Indiana, and Illinois—some hundreds of miles apart. What was the peculiarity in this season over others which induced the production of this bract? was one question. Whatever it may have been, it operated in bringing about a change of character without the intervention of seed directly on the plant, and in many widely separated places at the same time. What is to prevent a law which operates exceptionally in one season operating again and in a regular and continuous way? So far as we can understand there can be no reason, and, if it should, we have a new species, not springing from seed, or one individual plant, constituting one geographical centre of creation, from which all subsequent descendants emigrated and spread themselves, but a whole brood of new individuals already distributed over the earth's surface, and entirely freed from the struggle for existence which the development of a species from a solitary individual pre-supposes.

Aside from the great value of this illustration of how the whole character of a species might be modified simultaneously over a wide extent of country, it afforded a lesson in environment. External circumstances may influence modification, but only in a line already prepared for modification. This must necessarily be so, or change would be but blind accident, whereas palæontology teaches us that change has always been in regular lines and in co-ordinate directions, which no accident has been able to permanently turn aside. Just as in the birth of animals we find that however powerful may be some external law of nutrition, which, acting on the primary cell of the individual, decides the sex—yet we see that no accident has been able to disturb the proportion of the sexes born, which has always been, so far as we know, nearly equal. So in the birth of species, making all allowance for the operation of environment, the primary plan has been in no serious way disturbed. We have to grant something to environment in the production of new forms, but only as it may aid an innate power of change ready to expend itself on action as soon as the circumstances favour such development—circumstances which, after all, have very little ability to determine what direction such change shall take.

We know that distinct forms do spring through single individuals from seed, and that after battling successfully with all the vicissitudes of its surroundings, a new form may succeed in spreading through the lapse of years or ages over a considerable district of country. But the idea that always, and in all cases, species have originated in this manner, presents occasionally difficulties which seem insurmountable. In the case of the similarity between the flora of Japan and that of the eastern portion of the United States, we have to assume the existence of a much closer connection between the land over what is now the Pacific Ocean, in comparatively modern times, in order to get a satisfactory idea of the departure of the species from one central spot, and to demand a great number of years for some plants to travel from one central birthplace before the land subsided, carrying back species in geological time further perhaps than mere geological facts would be willing to allow. But if we can see our way to a belief that plants may change in a wide district of country simultaneously in one direction, and that these changes once introduced be able to perpetuate themselves till a new birth time should arrive, we have a great advance towards simplifying things.

WILLERSLEY CASTLE, MATLOCK, DERBYSHIRE.

As the traveller passes the small town of Cromford, on the road that leads to that well-known place of resort, Matlock Bath, the first object of interest that attracts attention is Willersley Castle, the seat of F. C. Arkwright, Esq. The Castle is beautifully situated on a hill with the Derwent below, and the grounds possess great variety and beauty. Directly opposite the Castle on the south side runs a ridge of rocks, which are beautifully fringed with trees and underwood, and though towering to a considerable height it does not terminate the prospect from the Castle, which commands extensive views beyond it. The entrance to the grounds is marked by a neat lodge and a broad well-kept carriage drive with broad bands of turf on each side.

Behind the Castle is a hill of considerable height, which is covered with wood to its summit. In this wood are several romantic rocks, round which runs a serpentine walk, about a mile in length, in an eastward direction. Another walk leads from the Castle in a northern direction to the flower and kitchen gardens. Off this walk at a short distance is a large tennis ground, kept in excellent order. The flower gardens are large and well kept, and are thrown open once a year on the occasion of a flower show, and many avail themselves of this opportunity of seeing them. The carpet bedding used to be a great attraction, but is discontinued. The beds are now filled with Roses and other useful flowers for cutting.

Opposite the flower gardens stands a large conservatory, which is filled with a grand display of bloom. Large *Camellias* are planted out in the centre, and these will shortly produce a grand effect. A vigorous plant of *Lapageria rosea* trained near the roof was very telling. A short distance from here in a snug corner is a large double span-roofed greenhouse. The stages are placed near to the glass, so that the plants receive plenty of light and air. This house is filled with *Calceolarias*, *Cinerarias*, *Cyclamens*, and *Primulas*, all in robust health.

A pretty hedge of Silver Hollies intermixed with the common green variety was very effective. A few yards from there on the left are the precipitous rocks known as Wild Cat Tor, from which lovely views are

obtained of the surrounding district, including Matlock Bath, the Heights of Abraham, the High Tor, the new Pavilion, the Royal Hotel, and other places of interest.

Leaving the pleasure grounds, we enter the kitchen gardens, which are enclosed with lofty brick walls, clothed with well-trained trees of various kinds. A grand range of glass recently erected next takes our attention. This was built by Messrs. Perry of Banbury, who deserve special praise for the design and workmanship. The houses are glazed without putty, and give great satisfaction. They comprise early and late vineries, Peach houses, forcing houses, a large stove, and a small Pine house. The Pines are planted out in narrow brick beds. The plants were in various stages of growth, some carrying very fine fruits. This house produces a moderate supply the year round, the varieties grown being Smooth-leaved Cayenne, Black Jamaica, and The Queen. The stove contains a good collection of plants for decorative purposes, which are in great demand. Over the roof are trained Allamandas, Stephanotis, and Hoyas, which are very pretty when in bloom, but obstruct the light too much for the plants beneath them. In one vinery a fine crop of late Grapes was still hanging, chiefly Lady Downe's. These were very sound and well coloured. I am sorry to state that Mr. Tissington, who has held the position of head gardener for many years, is now unable to perform his duties through illness; but every department is now kept in excellent order by the intelligent gardener, Mr. W. Bailis.—A. ANDERSON, *Lea Wood*.



HARDY FRUIT GARDEN.

PRUNING.—With the exception of Filberts, the pruning of all fruit trees and bushes should now be finished as speedily as possible, Filberts being left till after the catkins—the male blossom—have shed the yellow pollen freely upon the pink brush-like female flowers. When this is done the crop of nuts is secured, and we may prune at once. Of bushes Black Currants only require crowded growth to be thinned slightly, and old exhausted wood to be cut clean out. When the main branches of old bushes become stunted in growth and bear small fruits the bushes should not be destroyed hastily, rather would we remove the old branches, and encourage suckers from the roots—and they are generally plentiful enough—to form a new head. For this especial reason Black Currant bushes should always be stemless. Remember what a gross feeder it is, and not only take care to plant it in very rich soil, but to give it regularly heavy top-dressings of rich manure and plentiful soakings of sewage or other liquid manure weekly in summer, both to assist the swelling fruit and to promote a stout free wood growth. A well-grown Black Currant bush measures fully 6 feet in height and quite as much in diameter. Better, far better, is it to have a row of such fine bushes than many rows of under-fed starvelings. Red and White Currants should always have the chief part of the pruning done in summer by nipping off the lateral growth to two or three buds, only leaving three or four shoots at the top of each main branch to promote healthy sap action. The removal of these shoots and shortening of the leader therefore comprises the whole of the winter pruning.

Some caution is necessary in Gooseberry pruning wherever there are bullfinches. A mixture of lime and soot scattered thickly upon the branches on a damp day does much to prevent the ravages of these pests. Do this, and defer the pruning till you are reasonably safe. Late pruning no doubt makes a tax upon the health of the bushes, which, however, is soon set right by a top-dressing of manure and plenty of sewage during the season of growth. Raspberries have been pruned, and the canes tied to the tarred strings stretched to stout stakes. Training Raspberries is considered unnecessary, and is not now done in many gardens. We prefer doing it to facilitate fruit-gathering, and find that although our rows are 5 feet apart, yet the laterals laden with fruit project so far that we have barely room to get between the rows for fruit-picking. Advantage has been taken of recent frosts to wheel on manure among the bushes and Raspberries.

PLANTING RASPBERRIES.—Since writing our last calendarial note we have paid a visit to a lady and gentleman who have for a long time been readers of the Journal, and who are fond of fruit, but have been grievously disappointed by failures owing to the ignorance of an incompetent gardener. The most conspicuous failure was a Raspberry bed planted about a year ago. Strong canes were evidently procured, for they left full 5 feet high when planted, and so we found them with the old canes carefully tied to stakes, and the new growth consisting of a few slender shoots only 1 or 2 feet in height, so that this year instead of a full crop of fruit there will be none. Now there were two faults here—faulty pruning, and faulty planting. The canes should have been shortened to 18 inches, and the soil should have been made thoroughly and richly fertile and porous by heavy dressings of old decayed manure and coal ashes worked well into it. But first, if the subsoil was cold, heavy, and poor it should have been excavated, and 2 feet deep of the best soil to be had prepared for the Raspberries. For a depth of 2 feet another foot of manure would not be too much, and we shall in future insist upon a third part of manure

to two-thirds of soil and ashes. Raspberries to grow to perfection really require a compost, or a soil so rich in humus as to leave no doubt of its fertility.

FRUIT FORCING.

FIGS—Early Trees in Pots.—With a continuance of severe weather the night temperature must not be increased, but what is lost at night must be made up by taking advantage of whatever sun heat we are favoured with by closing early in the afternoon, or about one o'clock, and with a rising temperature. If the nights are very cold some mats, or, better still, blinds for covering the roof at night, the check to radiation will be so considerable that the necessity for hard firing will be greatly reduced, and it may prevent the trees receiving a check that not unfrequently is fatal to the crop. The fermenting material placed about the pots should receive frequent additions of warm leaves on the surface, which are to be worked-in in turning when considered necessary to maintain the bottom heat at the base of the pots at from 75° to 80°. Examine the pots frequently, and whenever moisture is necessary at the roots it must be given without delay, having to hand some liquid manure heated to the temperature of the house. It must be applied before the soil becomes dry, and if properly drained and the trees stood on pedestals of open brickwork, there is little danger of giving a pot Fig tree well furnished with foliage and fruit too much water, but there is a certainty of the fruit falling if the trees are ever allowed to feel the want of it. Syringe the trees and watch closely for red spider. Stop all gross shoots at the sixth leaf, and thin inside shoots, and remove useless spray that the young spurs and fruit may have the benefit of air and light as the season advances. Thinning the fruits must have attention as soon as the most promising and best placed can be decided upon for the crop. Trees that have been subjected to forcing for some years invariably show more fruit than they can bring to maturity, hence the importance of thinning before the last swelling takes place, as this is the time when trees over-cropped cast their finest fruits, those left being poor in size and quality.

Succession Houses.—Encourage the trees by providing the needful temperature, with a corresponding increase from fire heat, as the night temperature is reduced in severe weather, and maintain a good moisture in the atmosphere by damping available surfaces occasionally, syringing sufficiently early to allow the trees to become dry before dark. Keep the borders well mulched, and afford plentiful supplies of tepid water to the roots.

Young Trees in Pots.—Trees that were raised from eyes last year should now be encouraged with heat and moisture, as future success depends upon having early and thoroughly ripened growth. Remove all suckers, stop the strongest shoots, and train the leaders to straight stakes. Insert cuttings or eyes of the favoured varieties, and plunge in bottom heat. Trees raised from single eyes and grown on clean straight stems always make the best plants, especially as pyramids.

Planting Young Trees.—Where the planting of fresh trees is contemplated the necessary preparations must be made as soon as possible. The house for Figs must be a light one, and have ample means for ventilating and heating. A limited space only is required for the roots, and even then the borders should be made gradually. If the site be damp, concrete the bottom of the border, providing suitable drains and a proper outlet, and 12 to 18 inches depth of clean drainage are the essentials. The compost should consist of turfy loam rather strong, old mortar rubbish a tenth, road scrapings a tenth, and a similar proportion of charred refuse. These thoroughly incorporated will last a number of years. Secure the drainage with a layer of turves grass downwards, and raise with the soil to within 6 inches of the intended level, beating it down with a fork; the depth of the border when completed being 24 inches. The borders need not exceed 3 feet wide in the first instance. Turn the trees out of the pots, remove the soil, disentangle the roots and spread them evenly on the surface, and in layers with soil between each, the top roots being covered 2 or 3 inches, watering moderately to settle the soil about the roots. Mulching may be deferred until the roots are active. There is no Fig to equal the Brown Turkey for general use.

PINES.—The weather has been such of late as to necessitate the strictest attention, as in these houses much heat is absolutely necessary, especially in fruiting houses and those containing plants about starting into fruit, and as a consequence a dry atmosphere results unless sprinkling or syringing be vigorously enforced. Daily attention must be given, taking advantage of times when the pipes are least hot to well saturate their surroundings. In light structures and lofty houses the plants will need sprinkling much more frequently than in low or damp houses. The necessity for syringing can be satisfactorily ascertained by examining the base of the leaves, as if the axils contain moisture none need be given until that existing becomes nearly exhausted. Avoid wetting the flower, as if syringing be practised then discolouration of the fruit not infrequently results.

Summer Fruiters.—The fruits of Queen and other varieties for the summer supply will soon be emerging from the centres of the plants, and in order to afford them every encouragement to throw the fruit well up above the foliage careful attention must be given to watering and moisture, the bottom heat being kept steady at about 90° at the base of the pots, and the temperature kept at 65° to 70°; 75° in the day artificially, and 10° to 15° rise from sun heat. Keep successional plants and suckers at the same temperature as indicated in our last calendar, and take advantage of suitable weather to have materials ready for use when required, as materials for fermenting beds and for potting purposes.

CHERRY HOUSE.—It is advisable before the trees flower to either fumigate the house on two or three consecutive evenings to make sure of the

destruction of aphides, or the trees may be syringed with quassia water two or three times at intervals of a day apart, and before the flowers are fully expanded. No opportunity must be neglected which is favourable for setting the fruit. The fructifying agency of the pollen is most efficacious when it is light and dry, or about the middle of the day after air has been on some time on a bright day, and it should be distributed by means of a camel's-hair brush lightly drawn across the blossoms. Bees do the work much better than it can be done with a camel's-hair pencil, but it is best to have the bees in a warm position outdoors in preference to placing the hive in the house.

PLANT HOUSES.

Insects.—Where plants are grown in large numbers, and any of the many insects that infest them have become established in the houses, it is a long time before they can be thoroughly eradicated. At this season of the year there is an opportunity to wage war against them, and if it is impossible to exterminate them they may be so far got under as to give but little trouble the whole season afterwards. To have plants to sponge when potting and other work requires attention is not only bad management, but a waste of time. It is almost impossible to exterminate insects, especially mealy bug, when once fairly established in houses, but this nevertheless can be accomplished if the work of destruction is pushed on during the winter months. A day or a few hours should be occasionally devoted to this work in order to prevent the insects that may be left from breeding, for it is only by such diligent means that a thorough riddance can be effected.

Cleaning Houses.—It is useless to thoroughly clean plants unless the houses in which they are growing are cleaned also. The wires, woodwork, and glass should be washed with hot water and petroleum, or, better still, paint the whole with the oil in a pure state, and afterwards wash the house with hot water and softsoap. The walls, stonework, and floors may be well washed with muriatic acid and water, this being made sufficiently strong to burn well into the walls, and thus destroy any insects that may be deposited there. Previous to this it is a good plan to scrape and clean thoroughly all the old limewash if they have been kept clean by the aid of lime. They should afterwards be relimewashed, using the lime as hot as possible with a fairly strong application of petroleum added. The gravel used for standing plants upon or plunging material that may be employed should be removed, for it is often in this that insects establish themselves, and when removed the beds or stages must be thoroughly cleaned, for it is useless to clean either the house or the plants without this is well done. The pipes and staging if ironwork may be painted black after all the other necessary cleaning has been done. Cleaning plants and houses should be completed before any attempt is made to repot the general stock of plants that will require attention very shortly, for if they are potted and the work of cleaning has then to be done they are liable to be seriously checked and stand still for a long time in consequence. While one house is being cleaned, if the plants can be removed to another structure while the work is completed so much the better, for it can be done better and quicker when empty than when full of plants.

Propagating House.—In this house bottom heat is really essential for the successful propagation of many plants, and if derived from hot-water pipes, which is the case in most gardens at the present, the material used for plunging the pots in only will need attention. If cocoa-nut fibre, sawdust, tan, or any other material that is used has become too decomposed for the purpose it should be removed and replaced at once, and not left until the propagating frames have to be filled with cuttings. Work of this description should never be left until the last minute, but should be in readiness for the reception of cuttings directly they are ready and the season has sufficiently advanced to warrant their insertion. Where bottom heat is not derived from hot water a good heap of fermenting material should be prepared for making a hotbed, which will afford bottom heat for a long time if well and properly prepared before it is taken into the house. The litter used must not be wet or too decomposed, or the heat will be violent at first, but only last for a very short time. It should be placed in an open shed each day when removed from the stable until sufficient for the purpose has been collected. If many days elapse in collecting the first lot must be kept turned to prevent it heating. A good quantity of Oak or Beech leaves that was collected in a dry state and stored for hotbed-making should be mixed freely with the litter. In mixing the straw must be well shaken, the whole mixed together, and then thrown into a heap, which must be turned once daily until all rank steam has been thrown off. Directly the material has sweetened it may be taken into the house and the bed made up, when it will soon heat gently and be fit for use, which would not be the case if badly prepared or in a wet or too fresh state when taken into the house.

THE BEE-KEEPER.

QUALITIES OF HONEY.

WHAT are the qualities of good honey? seems to be attracting the attention of many people at the present time, and is even said that his important question is to be decided by the British Bee-keepers' Association. As the attempt failed to establish a standard hive, so will any attempt fail that is likely to restrict one kind of honey as

the first brand. Tastes vary, and it rests with the consumer to purchase that which suits his or her taste, and very probably the honey that is rejected by one will be relished by another.

For some months past I have been endeavouring to discover the cause of the variations of honey gathered from flowers of the same nature, but I am puzzled. Bees appear particular in keeping separate the different kinds of honey they gather and store in their hive. When taking the honey from my hives last autumn I observed not less than six distinct kinds in one hive—viz., a little from the Sycamore, Charlock, Lime, Clover, Bean, Thyme, and Heather, with patches of other kinds. From this hive I selected combs containing the four last-named, retaining the Thyme as excellent in the comb; the other three I dripped, the Heather in its liquid state being of a beautiful pale amber colour, with a fine body and aroma, with a slight bitterish but agreeable taste. The Clover was, as is usual, of a pale colour, and in consequence of the fine season of a good body with its usual fine piquant flavour, which makes it the universal favourite amongst the ladies as well as gentlemen with unimpaired tastes. The Bean honey either in its liquid or granulated form is no favourite of mine; it is too sweet, flat, and heavy, while the colour is dark and uninviting. All these three samples are candied, the Clover honey having small but well-defined granules. The other two samples have granules so very fine that to see the crystals a high magnifying power is required.

In samples of the same honey in the comb standing in the same place some of it unsealed remains in its liquid state unless on the outside, where, contrary to the dripped honey, the granules are large and the cells showing a proportion of the crystallisable and non-crystallisable honey, the latter being absent in the dripped honey. I would have set down this phenomenon with the dripped honey being due to the agitation when being dripped and the entering of air when being separated from the comb. But conflicting evidence comes in, showing honey gathered in the same moor underwent the same manipulation to be candied, but with large granules and part uncrystallised. How this difference arises I leave others to explain. My experience is that honey gathered in localities not far distant from each other differs greatly both in flavour and body. I have taken my bees to seven different moors, and every one of these moors yielded different coloured and flavoured honey, and before me at this moment I have two samples of Heather honey gathered at moors twenty miles apart. Both are candied—the one as fine as butter, the other with large granules; the former of a light saffron, and the latter of a high amber colour; yet when liquid they could not be distinguished one from the other, neither in the colour nor the flavour.

If the qualities of honey are to be fixed let it be by chemistry; there is a wide field for research in that way, and much might be learnt by its study, especially with honey, to help people to select the best for the various purposes it is employed, but it will never settle what is the best honey to suit every taste. Chemically speaking, there is a great difference in honeys, although most authors tell us that good honey is composed of equal parts of crystallisable and non-crystallisable portions, these containing three constituents—sugar, mucilage, and an acid; then divide these again into their respective gases, which gives but a poor idea to know what good honey is. Other modern writers tell us that the quality of the honey depends upon the age of the bees that gathered it—white when the bees are young, but depreciating in colour and quality as the bees get older. Then the same encyclopædias tell us the countries that produce the best honey—assertions with little to support them, for the best grades of honey and with flavour to suit all tastes need not be sought for out of the United Kingdom, and if the bee is properly attended the nation might be well supplied without depending on foreign supplies.

There has been much written about judging honey, and we have been told that good honey always granulates, yet granulated samples have been frequently disqualified. I am aware that the awards at shows will never give satisfaction to all, yet I think there should be consistence in precept and practice. What I consider bee-keepers should aim at is to carefully select all samples of honey, keeping every kind separate, never mix two kinds, and take care when the extractor is used to extract none but from sealed combs. Many honeys contain much of what may be termed the cream of honey; this is lighter than the main body, and is of an oily nature, disappearing if the honey is much heated, and is lost if mixed with the watery unsealed honey that is often thrown out by the extractor either by what is termed the "ripening process" or by fermentation consequent on the mixture.

Without saying more on what constitutes good honey I may, however, state that I had sent me last autumn from Miss Gayton, Herts, a sample of honeycomb gathered from the Saintfoin. The comb was elaborate in wax and tinged from the pollen of Saintfoin; the honey was very sweet, but rather deficient in piquancy to our best Clover grades, which would tell against it in competition with our old-established societies. Its body was good and in colour it was

unsurpassable; but best of all it candied, and that change brought another, making it of most exquisite flavour. This is a case showing that candied honey should not be disqualified unless it becomes insipid, as much of it does, especially where it has been subjected to heat. These remarks may not prevent associations fixing the points that honey should possess, but I trust it will impress bee-keepers to be careful what they present to the public for sale.—A LANARKSHIRE BEE-KEEPER.

THE BRITISH HONEY COMPANY—APICULTURE IN DANGER.

ON page 42 "A Lanarkshire Bee-keeper" names the above company as likely to be of doubtful benefit to the British honey producer, but probably he has not seen a prospectus of the company and carefully studied the articles of association printed on its back. In these articles not a word is said about dealing in pure British honey, or even pure honey; but in the second clause, sections *a* and *b*, power is taken to produce, purchase, sell, or otherwise deal with or in any kind or form of honey and wax, British or foreign, or any mixture of honey; in section *c*, to manufacture, purchase, use, vend, or otherwise deal with or in all articles and things belonging to or having reference to bees or their products; and in section *f*, as an incorporated company in England or elsewhere, or as an anonymous partnership in any British possession or colony, or in any foreign country, possession, or colony.

When this company was first mentioned by its chairman in the *British Bee Journal*, page 336, vol. xii., the lines laid down were strictly to "deal" in pure British honey only, and on pp. 353 and 427 no mention is made of anything different, all the articles or correspondence in that journal clearly showed that all looked at the scheme in this light.

The only thing which seemed at all wrong is the report of the Committee of the British Bee-keepers' Association on page 412 of the *British Bee Journal*, when out of the twelve members present five of them were promoters of the company, one of whom is its chairman and originator, and which, after the whole body of members of the British Bee-keepers' Association had adopted the frame 14 in. by 8½ in. as the standard, and consequently 4½ in. by 4 in., as the 1 lb. section, or without any authority from the members, resolved that the American standard 1 lb. and 2 lbs. sections should be the standard for this country, thus making it possible for American comb honey to be imported and palmed off as British, and this in the face of the fact that the 2 lb. section (6¼ in. by 5¼ in.) will not fit either in or upon a standard frame hive; while the 1 lb. (4½ in. by 4 in.) and 2 lbs. (4½ in. by 8 in.) will do both [there can be no excuse on account of cheapness, as the American makers make even small lots of odd-sized 1 lb. to 2 lb. sections at the same price as standards], and cannot be very well used in any hive in America. When I read the report I remarked to all my friends, "Does this honey company intend buying American honey unless they can get British cheaper?" and so was not at all surprised when I saw the prospectus. At the present time there is a ship due or nearly due in Liverpool with 100 tons of comb and extracted honey on board from San Francisco.

I have no fears of pure American honey coming to this country duty free, and no other bee-keeper need fear it if it is sold honestly; but take the present as an illustration. In the United States during the past season they have had a quantity of what they call "honeydew." The bee journals say they must not sell it, or they will spoil the market, as people will never buy a second lot for fear of its being like the first; and they must not winter their bees with it, or it will produce dysentery and cause all their bees to die. Well! what must they do with it if they are neither to sell or use it? Does not the answer suggest itself? Why, export it to England to sell for what it will fetch, and being in the same sized sections as the British standard, in which you cannot "taste before you buy," it ultimately condemns British honey as being like it, so preventing a second purchase and keeping down the demand for pure British honey. This is no imagination. Honeycomb commands in New York and Boston 10d. per lb. wholesale from the producers, while the Rev. V. H. Mayle offers 9d. for British, and says he could lay his hand on 130 tons; so honey cannot be shipped from New York to this country under 1s. per lb.

What has the British Bee-keepers' Association done to help the honey producers? The Lincolnshire Association annually holds a fair for the disposal of members' honey, which has always been a success; but the British Bee-keepers' Association has never followed the example and started one in London or elsewhere. They have done their utmost to increase the number of bee-keepers, and cause a demand for hives and appliances for the especial benefit of dealers, and so cause competition and reduce the price of honey, without in any way benefiting the present ones. At the York Show I heard their expert tell the public, when showing them an eccentric extractor, "that they could take all the honey from the combs with it, which they could sell for 1s. to 1s. 6d. per lb., and feed their bees with syrup for winter, costing 2d. per lb." Some bee-keepers who have read the publications and are going to spend their money in high-priced hives into which to transfer the contents of their straw ones, are filled with amazement when I tell them to stick to their skeps and never transfer them until they have thoroughly mastered the principles and details of the har-frame. I also show them how to make a frame hive for 3s., into which they can put swarms to learn with.

What we want now is a union on the lines—with some important modifications and additions—laid down by your able correspondent 'A

Lanarkshire Bee-keeper," whose articles give me the greatest pleasure, as he writes so much which I know from experience is correct and so little I can question. I always, when anyone asks me for a good authority to read, refer them to his articles in this Journal.

I and a number of bee-keepers are preparing a scheme for the organisation of all the bee-keepers in the British Isles into a union for our mutual benefit and protection, and if you will assist us a draft of the rules or constitution shall be sent you for publication and criticism. There is to be no ornamental beeless members in it; only *bonâ fide* bee-keepers.—A HALLAMSHIRE BEE-KEEPER.

THE BEE AND FRUIT FARMING COMPANY.

WE understand that this company, the prospectus of which has appeared in our advertising columns, is being favourably regarded by persons interested in the twin industry of honey and fruit production. Already in a private manner, and not by Mr. Garratt alone, the practice of combining apiculture with fruit culture has been lucrative; and, well conducted in favourable districts, there is every reason for expecting satisfactory results. It is impossible to estimate the vast quantity of honey that is wasted yearly in orchards by the want of bees to gather it, while these pay for what they extract in the work of fruit-fertilisation, which is a chief element in contributing to a golden harvest. We may add that this is not the company referred to above by a correspondent.

APICULTURE AND HORTICULTURE.

IF a person would reach the very highest success in horticulture, he must love trees and plants, must love to look at them, to inquire into their wants and requirements, and to administer to their wants as living things. If a man loves a tree for its beauty, for its shade, for its fruit, and for its company, and loves to study varieties of fruits and habits of plants and trees, then he has the first rudimentary qualifications of a tree and fruit raiser, and may enter on work with assurance of success.

The same rule will apply to apiculture. A person who would succeed should love the bees and their products, must love to look at them, ascertain their requirements, and administer to their wants. No others can expect to succeed. Though it is not essential that a person should enjoy the eating of honey, it is still desirable that such should be the case, for some human stomachs will not endure its sweetness. In such cases, however, a glass of sweet milk drunk after eating the honey will usually cause a pleasant condition of the system generally, and add to the health of the person using it.

If one loves the honey bee for its docility and beauty, for its pleasant and sporting flight, for its industry and work, for its architectural skill and indomitable energy, then the first principles of a bee-keeper present themselves, and such may safely proceed, expecting ultimate success.

In this, as in all other departments of business, it is only the careful and practical that may hope to succeed. Nature has provided the health-giving delicious nectar in myriads of beautiful flowers, which deck forest, field, and garden, and developed the bees to gather this abundant sweetness and store it in quantities far exceeding their wants, providing an opportunity for man to step in and second the efforts of Nature and the bees, and utilise the surplus honey for his pleasure and sustenance.

Bees and flowers are so closely allied, so dependant the one on the other, that we may well love both. What is there in all creation so soul-inspiring as a cultivated garden of Nature's flowers of variegated hues and heavenly grandeur? None but the unfortunate or despondent can fail to enjoy Nature in her garb of beauty, decked by the bounteous hand of Deity!

To produce a garden of living gorgeousness we may all aspire and long enjoy its gratifying results. We may as well become enthusiasts upon bees and flowers, for apiculture and horticulture go hand-in-hand.—(*American Bee Journal*.)

TRADE CATALOGUES RECEIVED.

Thomas S. Ware, Hale Farm, Tottenham.—*Catalogue of Flower Seeds and List of Dahlias and Bulbs.*

Regel & Kesselring, St. Petersburg.—*Catalogue of Fruit and Ornamental Trees, Roses, Hardy Plants, &c.*



* * * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Books (J. S. U.).—There is no work on Coniferæ equal to that of Messrs. James Veitch & Sons, Royal Exotic Nursery, King's Road, Chelsea, from whom you can obtain particulars on application. Johnston & Cameron's "Elements of Agricultural Chemistry," published by Messrs. Blackwood, contains much valuable information; there is no work published of the precise nature to which you refer. (*E. Farmer*).—We cannot ascertain by inquiry from some of the leading publishers that there are any works on "Artificial Feeding" by the authorities you name. If you can quote the exact titles of the works we can probably give you the information required.

Hardy Erica (J. G.).—One of the best for the purpose named is *Erica mediterranea rubra*, which has dark red flowers very freely produced.

Compost for Hoyas (F. H.).—If you prepare a mixture of two-thirds of rather light turfy loam, one-third of turfy peat, and add a twentieth part of lime rubbish and crushed charcoal, the plants with otherwise good management will be sure to grow well.

Acalypha musaica (E. T. B.).—You appear to have made a mistake, and we cannot give you any information without more definite particulars than those you have furnished. There is a plant named *Acalypha musaica*, but it does not bear flowers of the colour you named, and its leaves are variegated with shades of red.

Bedding Arrangements (J. R. W.).—The long border by the side of the lawn will be effective planted as you suggest, but would be still more so if you had a row of yellow *Calceolarias* between the scarlet and crimson *Pelargoniums*. The other long border will be rather heavy, and we think if you planted a row of dwarf *Ageratums* instead of *Iresine* it would be an improvement; but perhaps dark colours are preferred. We like the arrangement No. 2 for the Vine border better than No. 1, and think it will look well. You had better spread on a good thickness of manure, or the plants will unduly deprive the Vines of nourishment.

Primulas (F. G.).—The small smooth-edged *Primula* is very pretty by the delicate rosy tint, and the large fringed flowers are very fine. The small one is a reversion to the original type, of which we have seen hundreds in various colours. Such flowers find many admirers now, and on that account are worth preserving, but it may be well to remember that if they are permitted to flower with the large ones that the strain of these will soon deteriorate, as the result of natural fertilisation with the variety that is inferior in size and substance. If you desire to preserve the characters of the types the plants should be flowered in separate houses, or at least as far distant from each other as is convenient.

Plants for a London Greenhouse (H. T. F.).—Much would depend upon the position of the house as to what plants would thrive best; for instance, if it is shaded many Ferns might be grown, whereas if it be in an exposed sunny place they would not succeed so well. We, however, give the following list of plants that would be likely to thrive in a greenhouse in a district such as that you name:—*Acacia armata*, *A. platyptera*, *Agapanthus umbellatus*, *Azalea indica* varieties and *A. amœna*, *Tuberous Begonias*, *Camellias*, *Cyclamens*, *Fuchsias*, *Primula sinensis*, *Rhododendrons*, *Vallota purpurea*, and *Zonal Pelargoniums*. Suitable plants for training to the roof would be *Lapageria rosea* and *alba*, as these succeed well in towns. Many more plants might be grown, but these will probably be sufficient.

Outdoor Mushroom Beds (Old Times).—The manure should be turned as often as the mass heats through until the whole is quite sweet, and then little or no injury will result from mouldiness. It is sometimes necessary to turn the heaps five or six times. The heat, as is stated in the work you name, can only be regulated by the thickness of the covering; sometimes a depth of 6 inches of litter is sufficient, at other times thrice that thickness is requisite, everything depending on the nature of the material, thickness of the beds, and the weather. You have allowed the bed to get much too low; a covering of warm manure, and this in turn covered with straw, might perhaps resuscitate fermentation, and if it does the added material should be gradually removed, but the litter covering would have to be increased. Your bed may still answer if you can increase the heat to 60° or even 55°, though will not come into bearing so soon as usual.

Evergreen Flowering Shrubs for Chalky Soil (Pen and Ink).—*Desfontainia spinosa*, double Gorse or Furze, *Garrya elliptica*, *Escallonia macrantha*, *E. philippiana*, *Lignstrum japonicum* (Japanese Privet), *Berberis Darwinii*, *B. dulcis*, *B. stenophylla*, *B. Wallichiana*, *B. japonica*, *Mahonia aquifolia*, *Azara microphylla*, *Arbutus Unedo*, *A. Rollissonii*, *Cerasus myrtifolia*, *Viburnum Tinus* (*Laurustinus*), *V. Tinus lucidum*, *Spartium junceum* (Spanish Broom), *Cytisus multiflorus* (White Portugal Broom), *Andromeda floribunda*, *Hymenanthera crassifolia*, and *Cotoneaster microphylla*. These are the best evergreen flowering shrubs for your soil. To them you might advantageously add scarlet and yellow-berried Holly, Gold Queen and Silver Queen Holly, also the variegated forms of *Osmanthus ilicifolius*, the golden variegated *Euonymus*, Pampas Grass, the New Zealand Reed *Arundo conspicua*, which has its elegant plumes in full beauty in August, and some of the *Yuccas* such as *recurva*, *gloriosa*, and *filamentosa*.

Grafted Apple Tree (Trike).—Remove all the growths except the grafts, and prevent others by rubbing the shoots off which may push from the stems in spring. As the grafts have grown freely you will perhaps do well to shorten them to half their length, or even more closely; but we cannot give precise information, since you neither describe their length nor thickness. You cannot err, however, by shortening them to where the wood is quite hard, and you will increase the number of branches next year and lay a better foundation for a good tree than if you do not prune them. It is impossible for us to suggest a remedy for the barrenness of your Pear trees,

which "never do any good." They may not grow freely enough on one hand, or too luxuriantly on the other, or again, they may be infested with scale. They may, for anything we know to the contrary, produce blossom which is destroyed by frost. If you will give what particulars you can we will readily aid you if we can do so.

Flowers for Exhibition (S. B.).—We never saw better stands of cut flowers of hardy herbaceous plants than were exhibited at Liverpool early in August by Mr. Mease and Mr. Waterman, who secured the first prizes in the class for twenty-four varieties and twelve varieties respectively. Mr. Mease's twenty-four comprised *Liliums candidum*, *auratum*, and *excelsum*, *Gladioli brenchleyensis* and *The Bride*, *Alstroemeria aurea*, *Phloxes coccinea* and *Rose of Castile*, *Matricaria inodora* fl.-pl., *Potentillas Garneriana* and *maculata*, *Gaillardia hybrida splendida*, *Lychnis chalcidonica*, *Campanula Hendersoni*, *Achillea Ptarmica* fl.-pl., *Helenium pumilum*, *Spiræas venusta* and *Umaria*, *Telekia speciosissima*, *Dianthus Napoleon III.*, *Oenothera Youngi*, *Veronica corymbosa*, and *Agrostemma coronaria*; and in Mr. Waterman's stand very effective were *Liliums excelsum* and *croceum*, *Phlox Hercules*, *Eryngium amethystinum*, *Potentilla formosa*, *Chrysanthemums Souvenir d'un Ami* and *Précocité*, *Campanula Hendersoni*, *Centranthus ruber*, and *Bupthalmum salicifolium*. If those are not sufficient you may add *Monarda didyma*, *Agrostemma rosea*, *Rudbeckia Newmanni*, *Veronica subsessilis*, *L. fulgens*, and *Aconitum Napellus*.

Pruning Plum Trees (G. Wilkins).—Plums, like many other fruit trees, vary much in habit; some, as the Washington, Magnum Bonum, &c., if planted in a very liberal soil, producing young wood almost adapted for fishing-rods. Others, again, as the *Impératrice* section, being of a very delicate habit, are in age apt to become too weak. Of course there will be an intermediate class, and such may be represented by the ordinary Orleans, although the latter sometimes produces very gross wood when young. There is no fruit tree in which gross wood is more inimical to the proper development of the fruitful parts than the Plum. In trained trees, when young, and the soil unfortunately rich, the trees but too frequently have a tendency to produce these "robbers" in several places between the bole and the extremity of the branches; the sure tendency of such is to interrupt and appropriate the ascending sap, and thus to starve the fruit on the portions beyond them. The first thing the pruner can do is to remove all those very gross shoots that have unluckily escaped the growth-pruner's finger and thumb—such shoots in the large section as extend a half-yard or so in length. If they are leaders, of course they must be retained; but anywhere along the stem, as side or supernumerary shoots, they may be cut clear away, not leaving a morsel behind. In the moderate-growing kinds, what may be termed gross shoots will not be quite so long or so thick, but they may readily be distinguished. This refers to trees in which the "growth pruning" has been neglected; where such has been properly carried out there will be little for the rest-pruner more than simply a slight thinning-out.

Culture of Lasiandra macrantha (H. E. M.).—A cultivator who has been very successful with this plant gives the following information:—"Lasiandra macrantha is well known, but is unfortunately straggling in growth and sparse in flowering. Under easy culture this valuable plant may be had in flower from the end of October till the end of February. It is very useful in small 32 sized pots for various purposes of decoration. It strikes freely in the early spring—about the end of February—plunging the pots containing the cuttings in a house or frame having a temperature of about 60° to 70°; the cuttings also strike if placed loosely in cocoa-nut fibre. After they have rooted, which will be about the end of March, they should be potted singly and again plunged in heat until established. We shift them into larger pots and keep the plants in about the same temperature until May; they may then be removed to a pit or frame and kept rather close. They also enjoy a little shade in hot weather. About the first week in September remove the plants to where they are to flower; if continued in the frame much later than that time they will lose some of their flower buds which are then formed; the foliage also will turn brown at the edges and spoil the appearance of the plants. They flower well in a temperature of from 50° to 55°. If the house is kept rather dry it will suit them all the better. The soil used for potting is bright yellow fibry loam and peat in about equal parts, using plenty of silver sand. It also requires a liberal supply of water."

Tuberous Begonias (J. W. S.).—We are most willing to answer questions, and do not begrudge any reasonable amount of labour and space to enable us to answer them usefully; but we rely on our correspondents stating their wants and circumstances as clearly as possible, as this is of mutual advantage. Remove the old tubers and place in smaller pots of fresh soil, surrounding each tuber with sand, and if convenient a little crushed charcoal, maintaining a temperature of about 60°. If you start them in 4-inch pots and when the plants are growing freely carefully transfer them to 6 or 7-inch pots, they will make fine flowering plants if judiciously treated. They must be shifted before the roots are closely matted in the small pots, particular care being taken that the soil in which the plants are growing and that to be used is in a pleasantly moist condition. If the soil in which the tubers are first placed be moderately moist, and the fibre in which the pots are plunged be kept moist also, little or no water will be needed until they commence growing. You had better shade the front of the house permanently when hot sunny weather occurs by applying a mixture of "summer cloud" to the glass, or whitening and skimmed milk. It can be "stippled" with a soft brush so as to be the reverse of unsightly. Throughout the summer you will find the advantage of commencing the top ventilation very early in the morning, six o'clock not being a moment too soon in hot weather. Many amateurs fail in not opening the top lights until the maximum day temperature is reached. No greater mistake can be made than that, as it necessitates throwing open the front ventilators widely much sooner than they ought to be opened, thus drying the air considerably and making the house pleasant for insects. When the plants are growing freely and the pots are filled with roots you must give water copiously in the morning, yet with judgment, so that they do not suffer until your return; if they are allowed to flag they will fail to give satisfaction. Anyone can damp the house in the daytime in hot weather. You may report progress once a

month if you like, and ask any further questions, as we should like you to succeed in your object.

Soil for Fruit Trees (J. Duke).—The preparation of the soil depends very much on the kind of trees intended to be grown. In planting fruit trees, unless the soil be absolutely poor, or in a very exhausted condition, it is better not to apply manure except very sparingly. In most gardens the soil is usually sufficiently good to produce a healthy growth; and as the object is not to obtain large trees, but an abundance of fruit, the point should be to discourage a luxuriant production of wood, and to develop as much as possible fruit-bearing shoots and spurs. Many amateurs and even professional gardeners err in this respect. They think that a richly manured soil produces an abundant crop of fruit, whereas the tendency is rather to induce a great development of branches, which do not produce fruit till the tree has either grown out of all bounds or the roots have been subjected to pruning. We then counsel all fruit-growers to be careful in this respect, and not to plant their trees in too rich a soil. In planting orchard trees the case is very different, for then the object is to obtain trees of large dimensions with stout timber-like trunks, and the branches sufficiently high to be out of the reach of cattle. In such cases the soil should be made sufficiently rich to induce a vigorous growth, yet not too vigorous even for orchard trees, because when there is an excess of vigour in a climate like this, where the summers are frequently wet and sunless, and the autumn cold and frosty, the wood is not perfectly ripened, and the consequence is a rupture of the sap vessels, producing canker—a disease which the tree rarely ever recovers from. If the soil is really poor, make a good large hole a yard in diameter, and about 18 or 20 inches deep; fill this with good sound loam, and if it has a small admixture of calcareous matter in its composition so much the better. In planting the trees great care should be observed that they are not placed too deep in the soil. A very good rule is to plant them just as deep as they had previously been in the nurseries, which is easily ascertained by observing the collar, where the portion that has been under the soil exhibits the bark much smoother and paler than that which was above it; but allowance should also be made for the soil subsiding, which it will inevitably do; and if the roots are not kept well up to the surface, they will be liable to get too deeply covered.

Names of Plants (B. M.).—By consulting the stipulations referring to correspondence you will see that we do not undertake to name varieties of flowers such as the Chrysanthemum. (H. E. M.).—*Lasiandra macrantha*. See reply above respecting the culture.

COVENT GARDEN MARKET.—JANUARY 26TH.

MARKET very dull. Good samples of Apples in demand at higher quotations.

FRUIT.

		s.	d.	s.	d.			s.	d.	s.	d.
Apples	½ sieve	2	6	to	4	Oranges	100	4	0	to	0
Chestnuts	bushel	16	0		0	Peaches	per doz.	0	0		0
Cobs, Kent .. .	per 100 lbs.	55	0		0	Pears, kitchen ..	dozen	1	0		3
Currants, Rcd ..	½ sieve	0	0		0	„ dessert	dozen	2	0		6
„ Black	½ sieve	0	0		0	Pine Apples English	.. lb.	1	6		2
Figs	dozen	0	0		0	Plums	½ sieve	0	0		0
Grapes .. .. .	.. lb.	2	0		5	Strawberries .. .	.. lb.	0	0		0
Lemons .. .. .	.. case	10	0		15	St. Michael Pines ..	..each	3	0		7

VEGETABLES.

		s.	d.	s.	d.			s.	d.	s.	d.
Artichokes .. .	dozen	2	0	to	4	Mushrooms .. .	punnet	0	0	to	1
Beans, Kidney ..	.. lb.	0	3		0	Mustard and Cress	punnet	0	2		0
Beet, Red	dozen	1	0		2	Onions .. .. .	.. bunch	0	3		0
Broccoli .. .. .	.. bundle	0	9		1	Parsley	dozen bunches	2	0		3
Brussels Sprouts	.. ½ sieve	2	6		3	Parsnips	dozen	1	0		2
Cabbage	dozen	0	0		1	Potatoes .. .. .	.. cwt.	4	0		5
Capiscums .. ..	.. 100	1	6		2	„ Kidney .. .. .	.. cwt.	4	0		5
Carrots .. .. .	.. bunch	0	3		0	Rhubarb .. .. .	.. bundle	0	4		0
Cauliflowers .. .	dozen	2	0		3	Salsafy .. .. .	.. bundle	1	0		0
Celery .. .. .	.. bundle	1	6		2	Scorzoneria .. .	.. bundle	1	6		0
Colcworths .. .	dcz. bunches	2	0		4	Seakale	per basket	1	0		1
Cucumbers .. ..	.. each	0	4		1	Shallots .. .. .	.. lb.	0	3		0
Endive	dozen	1	0		2	Spinach .. .. .	.. bushel	2	0		4
Herbs .. .. .	.. bunch	0	2		0	Tomatoes .. .. .	.. lb.	0	6		1
Leeks .. .. .	.. bunch	0	3		0	Turnips .. .. .	.. bunc	0	4		0
Lettuce	dozen	1	0		1						

The ewes should now be upon a dry sound pasture, with plenty of rock salt to lick. Crushed Oats, bran, and chopped hay well mixed is given them in troughs, Ox Cabbages put daily about the pasture, but they have no Turnips, as we regard them as a frequent cause of abortion, and therefore avoid using them for the ewes. Shelter of some kind is indispensable for the lambs and forward ewes. If the ewes were marked every week after being with the ram, a calculation can easily be made of the number that are likely to require shelter at the same time. But it is always well to make liberal provision of enclosures and covered pens. We once saw a snug circular nook at the base of the South Downs turned to admirable account for this purpose. Parallel rows about a foot apart of thatched hurdles were put right round the circle, the space between the hurdles was filled with straw, and from the top of this wind-proof wall other thatched hurdles projected inwards and upwards at a sufficiently sharp angle to throw off rain; a few pens were made under one part of the roof for cases requiring especial care, and the remainder of the fold was left open for the flock, plenty of dry litter being kept scattered about it. The farmhouse was close by, and by this sensible arrangement the flock could be driven in at night, kept in altogether on stormy days, and the farmer could give an eye to it by night as well as by day. No matter how experienced and trustworthy a shepherd may be, the lambing season is a time of anxiety for the master, and when snow is falling fast and being driven by a strong wind into deep drifts he cannot remain in bed. It is at night when a cold cutting wind from the north or north-east sweeps across open pastures that heavy losses among lambs frequently occur. The man who wilfully subjects his lambs to such exposure is decidedly unfit to have charge of them.

DIFFICULTIES.—Parturition does not often require interference, but cases occur when the throes continue for several hours without a birth, the ewe becomes exhausted and assistance must be given. A tablespoonful of equal parts of brandy and nitre, and two tablespoonfuls of a strong infusion of ergot of rye will strengthen the ewe and enable it to bring forth the lamb if it be alive and in its natural position with the forefeet on each side of the head. If it is dead it must be removed by the thumb and two fingers. This operation requires some skill and much patience, and the ewe must be held to prevent struggling. The vagina is then carefully washed with warm water, and a mixture of one part of Calvert's carbolic acid and seven parts of gallipoli oil applied to the uterus with a syringe. One application of this invaluable mixture is usually enough. It is equally efficacious in cases of straining, or when there are symptoms of fever or inflammation. The cure is speedy and certain, and the heavy per-centage of losses at one time considered inevitable in a breeding flock is altogether avoided. We have never forgotten the first case which we so treated. The ewe had been straining for several hours, and was much exhausted. A dead lamb was taken from it, and the acid and oil applied. The poor animal at once appeared soothed and easy, as though pain had ceased. We thought it necessary to repeat the dressing in about four hours, but when we went to do it we found the ewe quietly feeding, and evidently so comfortable as to require no further help.

It happens occasionally that the ewe refuses to take the lamb or allow it to suck, and when this unnatural freak is persisted in, the lamb has to be put to another ewe or brought up by hand. The culprit then has a swollen udder, which may or may not be troublesome, but when a ewe loses its lamb after suckling it for several days, the udder quickly becomes distended and hard, causing it much inconvenience and pain. Equal quantities of olive oil and eau de Cologne poured in the hand, mixed with a finger, and rubbed persistently over the udder, soon soften it sufficiently to allow the milk to be drawn easily from it.

Protrusion of the uterus occasionally occurs after severe straining. When this happens we regard the ewe as useless for breeding, and at once tie a strong ligature around the protruding part as high up as possible, and it falls off in a few days. The pain is, we believe, only momentary; numbness must apparently quickly follow the tying, for the animals we have so treated showed no signs of uneasiness or pain, and they fatten well after the weaning of the lambs. Gentleness and patience are essential in the management of the breeding flock. Sheep are timid animals, and ewes sustain much harm from being driven carelessly or hastily. Kind treatment and gentle usage go far to ensure success with the lambing. But the most essential thing of all is the master's eye; with that frequently among the flock by night as well as by day, nothing can go far wrong, always provided he possesses the necessary knowledge and experience to guide matters with a prompt and sure hand.

(To be continued.)



THE LAMBING SEASON.

In the west and south the lambing season has already begun; in a short time it will have become general, and we may now usefully turn our attention to a brief consideration in detail of the points worthy of especial care in this important branch of farming. No doubt many a farmer is now ready enough to say that profitable sheep farming is a thing of the past, and it certainly is heavily handicapped by foreign competition both in wool and mutton; but it still affords a profit at any rate, and the agricultural returns of last year show a decided improvement in numbers both for Great Britain and Ireland. With upwards of 26,000,000 sheep in the country we are fully justified in regarding the lambing season as important.

WORK ON THE HOME FARM.

Horse and Hand Labour.—With timber-drawing and much extra carting of coal, the carting of manure upon grass land from the mixens containing the bulk of the manure cleared from the cattle yards last spring, the horses have been so fully employed that we have considerable arrears of underwood carting upon hand. This, however, must wait now till the ploughing of seed lays and Mustard folds for Peas, Beans, and Oats is finished. One field that is sorely infested with Charlock we shall sow with Peas, keeping the drills full 12 inches apart to admit of frequent hoeing as long as possible after the Peas are up and growing freely. This field has been two years under Rye Grass, and last autumn we attempted paring and burning it, to destroy the seeds of Charlock and other weeds as well as the larva of insects, and to impart fertility to the land with the ashes. The surface was so hard that we could not manage it, so now we must resort to artificial manure and a persistent use of the hoe. We know nothing so disheartening in farming as this battle with Charlock. Last spring a large field was ploughed and stirred repeatedly, and sown as late as was safe with Oats, which were drilled further apart than usual. Hoes were kept going as long as possible, and the Charlock was pulled out of the rows. Yet another crop came after the corn was too tall for hoeing, and soon the entire field was a sheet of yellow blossom. Undoubtedly with Charlock prevention is better than cure, and we now manage to keep it from spreading by looking closely after the destruction of those first few plants in a field which, if left alone, deposit seed from which come thousands of plants next year.

Live Stock.—Mares to foal early in April should not be overworked from the present. Exercise is so good for them that gentle working for another month does good rather than harm. Colts of two years old should now be gradually broken to harness and work. Patience and firmness are of the utmost importance in doing this. Let the harness be put on slowly and gently, taking plenty of time about it, especially with a nervous colt. Then lead it about and accustom it to the feeling and noise of the harness. Next day begin breaking it to the plough by putting it in a single yoke between two steady old horses. If the colt prove fairly tractable and handy do not by any means forget that it is a colt and trust to the care of a boy. We have known more than one serious accident happen through such carelessness—the report of a gun, the blast of a horn, or any uncommon noise or spectacle, may frighten the timid animal and cause it to bolt if it can. As a rule it answers best to break them to the plough at two years old, but not to take them into the team till the following spring.

SILOS AT BEDFORD.

A CONTROVERSY has arisen respecting ensilage. Though all are agreed that some results are preferable to others, and that sweet silage of good keeping quality loses less in preparation than that in which an acid taste predominates, there is great difference of opinion with regard to the process by which any definite results are to be obtained. The late Dr. Voelcker's testimony in favour of sweet ensilage was thus placed on record: "That the loss is greater in making sour than sweet silage can hardly be doubted. In the preparation of sweet silage active fermentation does not take place, and in consequence the sugar and other fermentable constituents of green food are subject to much less change and suffer less loss than when silage is allowed to pass through a prolonged series of fermentative processes, during which the sugar and other carbo-hydrates in the green food are broken up and their elements reunited into new combinations, which are partly gaseous and pass away altogether." A silo of certainty—a silo which is under perfect control—would attain the end which, having been scientifically indicated by the great agricultural chemist, is now acknowledged by all farmers who have adopted the system to be the most desirable. Or, indeed, supposing that opinions should generally veer round from the "sweet" to the "sour" side of the question, accuracy would just the same be requisite in any method adopted for procuring the desired effect.

The true theory of the silo has, perhaps for the first time, been worked to a practical conclusion by Mr. James Howard, M.P., on his farm at Clapham Park, near Bedford. The curious uncertainty which had heretofore beset the process of ensilage had, it seems, greatly exercised the inquiring mind of this eminent agriculturist. Whether the acetic, the alcoholic, or the saccharine principle should prevail was a question only to be settled by chance. That question would now appear to be confined within definite bounds, and the result to be brought under positive control. A visit first to Mr. Howard's farm, a few miles from Bedford, will afford a more satisfactory demonstration than words can possibly give. On the road from the Midland Railway station at Bedford we shall see that all the land once in tillage for various crops is now under grass. Indeed, there are some undulating pastures by the roadside which are pointed out as having but recently been redeemed from the condition known in some hapless countries as "ruinate." That there should in these days have been land only fifty miles from London, and within a distance of two or three miles from the thriving town of Bedford, lying altogether uncultivated, is indeed a sign of agricultural depression or languid enterprise hardly to be looked for.

Built against a steep bank, on the top of which is a large field, Mr. James Howard's solid and air-tight brick silo can be conveniently filled from above. It is 20 feet high from the lower ground, which is a well-kept yard; and from this deep level, of course, the entire front of the elevation is seen. A double door, with a high sill or threshold, gives access to the interior from below; and a similar opening, as to a loft, is protected in the same manner high up. The hardest bricks have been used in constructing the walls of this silo, and a large proportion of cement has been mixed with the mortar. Ascending to the field above, we see that a galvanised iron lid, of flattened dish-cover shape, dips at its edge, on all sides, into a groove which is filled with water, and which thus makes an efficient atmospheric trap. This groove or gutter is formed by a top course of channelled stoneware tiles, corresponding in thickness with the hard brick walls. The inner flange of the channel is somewhat higher than the outside rim, so that any superfluity

of water, caused by a heavy rainfall, pours down on the exterior surface of the wall. A sufficient depth of groove ensures the reserve of water at all times, except in seasons of extreme drought, as the supply is renewed by every shower; and it is seldom that the little moat is half exhausted. For the means of raising and lowering the iron cover, a "cat-gallows" frame is fitted above, with chains, which are easily worked by a windlass.

It is now time to consider the specific object which Mr. Howard had in view when he built this silo. Seeing that, by all the various methods, and with the greatest care in manipulation, the ordinary process of top-weighting and enclosure is attended with such remarkable uncertainty, this gentleman was led to investigate the cause; and he has found it, or so he believes, in the lack of trustworthy means for confining the process of fermentation within a certain range. The real object aimed at has been, of course, the exclusion of atmospheric air. But the pressure so implicitly relied on for this purpose—the covering of the compressed mass by boards or earth—has been subject to strange variations of result, and it would appear that such means of exclusion do not invariably prevent the setting-up and escape of active currents produced by fermentation, nor their replacement by descending currents of fresh air. Mr. Howard's first experiments, preliminary to the construction of his working silos, were made with large glass jars, the transparency of which enabled him to watch the differences of fermentation. With one set of jars he followed the ordinary course of ramming down the fodder and leaving it under a top weight. Then filling, or nearly filling, the other jars in the same way he closed and inverted them, so that the only air which could affect the substance was that limited quantity left in the space beneath. In every comparison it was seen that the fodder in the jar which had been turned topsy-turvy was more regularly acted upon than was the mass in the corresponding jar which contained the silage weighted at the top.

Proceeding on the principle conclusively established in his mind by these simple tests, Mr. Howard built the silo which has been described, and which, with a height of 20 feet, encloses an area 12 feet square. It was completed in the autumn, and was filled with unchopped green Clover of the second crop. This was simply trodden down by boys, and no weighting of any kind was adopted. On being opened shortly after Christmas it was found to be of the same density as well-stacked hay, fragrant with a suggestion of sweetness, and slightly alcoholic. Even at the very top, where the trampling had but lightly pressed the silage together, the surface layer was perfectly free from mould, nor was this portion of the fodder less acceptable to the animals on the farm than the lower part compressed by its own weight. The young horses took to this food as kindly as did the cows. It may be mentioned that the silo in question has been constructed with a drain, which has been pronounced unnecessary, and which will probably be omitted from any future building on the same plan. At the implement works is a smaller silo, differently fashioned, but conducing to the same result. It is a cylinder of galvanised iron, set up on end like a funnel; and it has a concave cover precisely on the principle observed in the silo at the farm. The only difference in the filling of this chamber is that the green Clover was chopped instead of being put in whole. It is therefore looser at the top, and can be separated with a fork as easily as cut chaff. Nevertheless it is in all other respects precisely similar in condition and quality to the uncut Clover in the larger silo. An advantage not yet mentioned attends Mr. Howard's plan. Additions to the first storage may be made at different times during the season, and as the cover is easily lifted, the filling-up can be proceeded with as often as the sinking may render it desirable. As a matter of fact, the brick silo was filled at three separate times, some weeks elapsing between the first and last operation.

Since Mr. Howard made public his system another great authority on ensilage, Mr. George Fry, who had previously contributed to the science of this subject by pointing out that if grass in the silo be allowed two or three days to heat before it is pressed and weighted for the exclusion of air, so that the temperature may rise to 125° or even 150° Fahrenheit, the result is a "hay" fermentation instead of the fermentation leading to the formation of lactic or acetic acids—has joined issue, his contention being that if the accession of fresh air be rigorously prevented all fermentation ceases. The reply, that if the most active agent in fermentation, atmospheric air, be controlled the result of the process can be controlled also, is certainly strengthened by demonstration, as anyone may see by a visit to the Bedford silos, which are opened by Mr. Howard to the inspection of all who are interested in this important agricultural subject.—(*Daily Telegraph.*)

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain
	Barometer at 32 nd and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1885.										
January.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
Sunday 18	30.110	36.9	35.4	E.	37.0	37.7	34.2	38.9	34.0	—
Monday 19	30.251	36.1	35.0	E.	37.2	37.6	34.9	36.8	34.4	—
Tuesday 20	30.125	32.2	31.7	N.E.	37.0	36.1	31.8	34.8	31.7	—
Wednesday .. 21	28.990	26.9	26.0	S.E.	36.5	34.3	25.8	35.5	18.8	—
Thursday 22	30.028	30.4	29.5	S.E.	35.8	35.9	22.8	35.6	16.8	—
Friday 23	30.099	30.9	30.9	N.E.	35.5	36.2	28.4	44.6	28.2	—
Saturday 24	30.146	30.9	30.1	E.	35.2	37.3	29.3	40.0	23.2	—
	30.107	32.0	31.2		36.3	36.4	29.6	38.0	26.7	—

REMARKS.

18th.—Overcast and dark.

19th.—Dull and overcast.

20th.—High yellow fog all the morning; dull afternoon, but not so dark.

21st.—Cloudy morning; very cold, fine afternoon.

22nd.—Cold, dull, and foggy.

23rd.—Dull foggy morning; fine bright afternoon.

24th.—Dull, but sun visible through fog.

Colder than any week during 1882, 1883, or 1884, the mean temperature being very little above freezing point; easterly wind, dry weather, and a generally cloudy sky.—G. J. SYMONS.



COMING EVENTS

5	TH	Royal Society at 4.30 P.M. Linnean Society at 8 P.M.
6	F	
7	S	
8	SUN	SEXAGESIMA.
9	M	Royal Geographical Society at 8.30 P.M.
10	TU	
11	W	Society of Arts at 8 P.M.

EARLY-FLOWERING CHRYSANTHEMUMS.

AS the paper I wrote last year for the *Journal of Horticulture* was thought useful, I have for some time intended writing another, giving an account of the doings of the past season, but it has been delayed until now. I trust, however, it is not too late for those who wish to profit by it in the forthcoming season.

Early-flowering Chrysanthemums are no longer obscure plants. They are now coming to the front, and they create a sensation, which was not the case a few years ago. The season just past has been a good one for the growth of the plants, although rather too dry around London and through most of the south and midland counties. The progress this season has been marked by the first prizes ever offered for the early-flowering Chrysanthemums, and we have to thank the Crystal Palace Company and Mr. Head for the liberal manner in which the idea was carried out. Unfortunately Mr. N. Davis of Camberwell and myself were the only competitors, still everything must have a beginning that is to continue growing. It is perhaps proper that I should say Mr. Davis received the first prize, and myself the second. The prizes were £4, £3, and £2 for a collection of not less than six varieties, three of a sort grown in 8 inch, or 24-size pots. These pots I consider too small to do full justice to the plants, and hope in future that exhibitors may be allowed to grow their plants in 16-size pots, which are much better for the purpose, and also more likely to be in stock in the garden or nursery of the person intending to exhibit. The time of the Exhibition was the 5th and 6th of September (the National Dahlia Show), and the sorts I had then ready for the purpose were Madame Desgrange, Lyon, Mrs. Cullingford, White St. Crofts, Mdlle. Jolivart, and the so-called Late Flora. It will thus be seen that these are the varieties that may depended on for that particular time, though every season at the present rate of progress will bring new sorts to the front. The additions last season were numerous, and there seems a fair prospect for this summer bringing still more to notice.

The new early-flowering varieties which I grew for trial last season were as follows:—

SALTER'S EARLY BLUSH.—To this I give the first place as a plant of much importance and having a capacity to come in advance of old Illustration—that is, the Marie Longarre of the French. It is very early, flowering by the 28th of June under glass. It is very desirable as a dwarf sort, growing only 20 inches to 2 feet high, and generally requires no sticks. The foliage is abundant, and the flowers about 2 inches across, the colour being a bright pale pink. The habit of the plant is much like St. Mary, and the leaves resemble that, but it is earlier. It is a very good, as also a durable flower, standing heat very well. On the 20th of July flowers which opened on the 28th of June were hardly faded. It was then in good condition, the thermometer in the house beside it having been many days up to 100°; in fact, so hot that it dried the flowers of the double Zonal Pelar-

goniums close to it. It is very easy and prolific to propagate, which is not the case with all the early and semi-early sorts. A cutting which was inserted on the 18th of April, on the 31st of August had the two first flowers fully out; the plant was then 21 inches high, and covered with buds. Another cutting inserted on the 25th of May was on the 31st of August 1 foot high, and had its first flower fully out. This last was a top cutting, which made a good plant in a 48-pot. On this same 31st of August, too, the plant which flowered in June was in bloom the second time.

FIBERTA.—This, the next valuable novelty, is a discovery. I do not know where it originally came from, or who raised it, and if anyone should say it is very old, that may be true, but I know very well that I never saw it before, and none of the experienced growers to whom I have shown it have any knowledge of it. It is a yellow Pompon of the very best class, resembling Madame Marthé, but it is rather a flatter flower and much more profuse; in fact the most profuse I have seen, superior in this respect to Aigle d'Or, and not fugitive like that. The flowers are very full of florets—I counted 429 in one flower. The blooms are about 1½ inch across. It is well adapted for cutting purposes, each individual flower having a stalk 2 inches long, which enables every flower to expand without any buds being removed. The colour is a very bright pale yellow. Its first flowers expanded on July 14th, and from that time till the end of October they came to perfection in such numbers that they were in dense masses. The foliage of this plant is poor, and being of slender habit it requires support to keep up the large numbers of flowers. It is a robust plant, easy to grow and to propagate, just likely to suit market growers. It has been said that this is sometimes called Jardin des Plantes, but I have never seen it so. I know both the Chrysanthemums called by that name, and it is not like either of them.

LATE FLORA.—The French are to blame for this misnomer, as it is truly one of the early varieties, flowering by the 11th of July from cuttings inserted March 29th, and I have given it the prefix of early that others may not think it really late as I did last season. It is a quick robust grower, though not very stout, but being of dwarf habit that is not much consequence. It grows only 18 inches to 2 feet high. The flowers are of a fine deep yellow colour, almost equal to St. Michael, they reflex, and are 1½ to 2 inches across. This is different from most others in one respect—namely, the flowers do not open all at once, but the plants continue blooming for months. On the 18th of October I had plants covered with flowers which had been flowering over three months and nearly four. I believe as a small pot plant it will prove one of the best. A plant in a 48-pot on the 28th of September showed thirty-eight open flowers not faded. Although it is not so full a flower as some—that is, the petals are not so numerous, it expands in such a way as to fill the flower well, forming a rather flat, not globular bloom. It requires no sticks, and endures storms of wind and rain well.

MADÉLINE DAVIS.—A new early yellow Pompon, raised by Mr. Davis of Camberwell, London. It is the earliest of all Chrysanthemums I know, having come into bloom on the 12th of May, or three days before Nanum. It is a profuse bloomer and rapid grower, from 12 to 16 inches high.

MONS. LUQUET.—One of the latest of the early varieties, not flowering until the end of September, but it is a distinct and valuable sort, of French origin. It slightly resembles Delphine Caboche, is not so early as that, but much better. It is one of the most profuse bloomers, grows about 32 inches high, stout, and thick, of robust habit, with dark green foliage. The flower is very full, the petals short and thick. It is rather more blue than Lyon. The flowers are 1½ inch across. It is altogether an admirable garden plant, bearing a mass of blooms.

I will now say a few words on some of the varieties of which this is my second season's experience.

WHITE ST. CROUTS.—This has proved itself as good as last season, being as robust in every way as the parent. In fact, at all times of the year, even in the middle of winter, it grows like a weed, and none of the plants have varied in any way from white.

MRS. CULLINGFORD.—This, too, has proved first-rate under all modes of treatment. It does well at all times, growing well through the winter. There is little doubt that it will become a favourite for supplying white flowers.

ANDROMEDA.—There are two varieties under this name, *Andromeda* and *Andromeda rosea*. One is a sport of the other, and they are both late Pompons. There is also an early-flowering variety sold under the name of *Andromeda* which is really the old *Durham*. The faults of this are that it is an irregular and uncertain grower, besides being rather fugitive with me; but some people think more highly of it, their soil and climate probably suiting it better.

MRS. WOOD.—An old variety, now called *Luxemburg* by many, but it is not the one formerly sold by that name. I have seen it very fine this season, and though the colour is dull it always was a full flower. It is a dull buff tipped with red, which just suits the æsthetic folks. It makes with *Maidenhair Ferns* very fashionable shoulder bouquets, which look very novel and refined.

FREDERICK PELE.—In some places this has been extra fine this season, the flowers being a bright crimson without any gold tips, as I have never seen it before. We want a good crimson Pompon among the early sorts, for this is not so strong a plant or profuse a bloomer as we could wish; still in some respects it is the best we have at present.

As these lines will probably reach far distant parts, and some may wish to see these sorts growing before purchasing, I may mention that they are now obtainable from most nurserymen both in the provinces and around London.—*W. PIERCY, West Road, Forest Hill, London, S.E.*

GROS GUILLAUME GRAPE.

I REGRET to have failed in making myself sufficiently clear for "Market Gardener" to understand the points alluded to when offering a few remarks upon the cultivation of the above Grape. If "Market Gardener" will again read my remarks, page 63, he will find that they refer only to the usual management, or rather mismanagement, in the growing of *Gros Guillaume*. As he desires to know something more about my treatment of both root and branch, I gladly comply with his request.

In the first place, I may state that the vinery is span-roofed, standing north and south 18 feet high, with lantern top 3 feet wide, and ventilated at the side. It is 60 feet long, 34 feet wide (outside measurement), and is also ventilated by side lights 2 feet 6 inches deep, so that in the hottest weather we can easily obtain plenty of air, which is of the utmost importance in preventing scalding of the berries. I consider it a decided advantage for all large late vineries to have a lantern top, as thereby the air is admitted well above the foliage, and consequently the Grapes are less liable to rust from exposure to cold draughts. The house is wired horizontally, 9 inches apart and 20 inches from the glass Borders inside and out 24 feet wide.

The Vines had been planted ten years last August, and may be said to have passed the period of strong rank growth that is usually allotted to Vines. In point of fact, they never were more vigorous than they are at the present time, and, as "C. A. M. C." remarks, however, pinched fresh growths appear, and in many cases they show bunches until September, positive proof that the roots are absorbing and the Vines not overcropped. It would be tedious to go through all the details of border-making, &c; suffice to say the first portion of the borders was composed of very moderate soil, obtained from the moors, consisting of rather heavy marly clay resting upon shale, much of which had to be charred to prevent the whole from running together when the fibre and bracken roots are decomposed. To this is added a liberal supply of half-inch bones, nothing else. Subsequent additions have been made to them with somewhat similar but better soil strongly impregnated with iron; to this sea sand and half-inch bones have been freely added, with two or three dressings of lime. In winter, after the Vines and houses have been cleaned, an annual heavy covering of fresh cowdung is

given and well washed in with liquid from the farm tank. During the growing season the inside borders are lightly dusted with Thomson's Vine manure (now manufactured at Clovenfords) every fortnight or three weeks, according as the weather is bright or dull, then slightly forked over and thoroughly soaked with clean water. In this way the atmosphere is kept pure and wholesome, a great factor in keeping the berries clean and free from rust.

As stated on page 63, the spurs on the Vine are few and far between. I find I was slightly in error in stating seven on either side of the rod. One side of the house has seven and the other eight. The laterals are trained to every third wire one over the other, and when in full leaf there is about a foot of open space between the lines of foliage, thus allowing the sun almost from rising to setting to spread its rays not only upon the bunches, but on the border, which may in some measure account for the disinclination of the roots to wander outside into a home that is neither so warm or comfortable. All the late Vines in my charge are treated in much the same way as described, only no other variety produces anything near the same weight of Grapes that we get from *Gros Guillaume*. In pruning, I cut back to one or two buds, as I find the best and most compact bunches are obtained from the shoulder bud of the spur.

For the benefit of "Market Gardener," I may add that in the case of *Lady Downe's Seedling* we take two bunches off each very strong lateral.—*J. McINDOE.*

TRENCHING GROUND.

It is pardonable in cultivators when they discuss a practice which has been well understood for centuries past, and though nothing new is likely to be elicited in the art of trenching, such discussions on everyday practice are beneficial to the young and inexperienced. The "rule of thumb" practice of manipulating land for the cultivation of vegetables, &c., still has some adherents, and such imitate only the practice of others, which might be excellent in some localities but very injudicious, and perhaps ruinous, in other districts. We have known Scotch farmers who have held up to ridicule the practice of their southern brethren; and yet, when they have been located among the latter, have adopted the methods of cultivation which they have formerly severely censured. They found that change of soils, customs, and resources (new to them) compelled them to change their practice. In the northern fertile districts land is more highly rented and labour double the price generally paid in east, south, and west of England; and it is well known that except cultivation is high—abundance of manure given, deep tilth, and good drainage—tenants cannot make headway.

In horticulture we find cases very similar to these. Deep trenching in some soils is attended with the best of results, and in other gardens where soil is of a minimum depth, the subsoil inert or unwholesome, trenching deeply would be foolish in the extreme. A small portion of poor soil brought to the surface to mix with rich land (light soil with heavy do., or *vice versa*) is a practice which is attended with good results. On some land we have trenched three spades deep, leaving a rough open bottom; while on other portions of ground (sometimes in close proximity to each other) we could not go more than the depth of one spade with advantage. This season, as we often have done before, we are trenching one spade deep, leaving a bottom deeply turned over, and the trench is filled with trimmings of turf, decayed garden refuse, and the top spit placed uppermost. The bottom, being a brown sandy mixture, should remain where it is until the upper crust requires "refreshing." While forming foundations two years ago for glass erections, the bottom soil was used to raise the vegetable plots to a level, while the surface soil was spread out on an empty space exposed to weather to be sweetened for mixing with Vine border soil and general use, which has answered the purpose well. On the vegetable ground, however, we expect it to be a work of time before the ground is at a high state of fertility, the soil placed there being poor; but a mixture of vegetable mould and other suitable material pointed into the surface has enabled us to crop closely and grow good produce.

Judicious trenching has, beyond a doubt, been an important operation in the leading gardens of the country for many years, and in numerous cases distinguished cultivators can point to deep tilth as a primary cause of their success, and we might add to this—economy. Manure turned just under the surface is subjected to much waste by evaporation; but when rich and often unwholesome surfaces are amalgamated with soil a yard deep or so drought is defied, rooting downward is unimpeded, and where drainage is defective the depth of soil to a great extent modifies the evils of stagnant moisture. When turning attention to the success of distinguished gardeners living in

counties of England wide apart, it is satisfactory to those who advocate the practice of systematic trenching to know that, almost without exception, the chief agency under the direction of these men in gaining their honours as high-class cultivators has been deep tilth. The late Mr. Barnes at Bicton, Devonshire, almost more than any other man advocated deep and systematic trenching. Though that well-known cultivator had much of his early training in market gardens, where double digging is the exception, he struck out new lines for himself when he was director in private gardens. The late Mr. Cramb, when at Tortworth, Gloucestershire, practised trenching extensively, and advised others to do the same.

Mr. Thomson, Clovenfords, when at Wrotham Park managed the kitchen garden (like the other departments there) in a manner unsurpassed at the present time, both by high keeping and productiveness, and made trenching a special means of raising first-rate vegetables in great abundance, reducing the labour of watering in hot dry seasons, and extreme wet weather was never a barrier to success. When I was a youth employed under that veteran (like others who were similarly privileged) I was impressed with the instructions given while trenching was going on—that of going a good depth, but to be careful not to bring up the subsoil in any quantity, but turn it well over in the bottom. Strawberry-growing, like other fruits at Wrotham, I have not seen excelled. Keen's Seedling, especially, was forced extensively, and when done with under glass the plants were placed out in the well-trenched ground, which was heavily manured at the surface under the top spit. Mulching, except by straw to keep the fruit clean, was rendered unnecessary. At Dalkeith trenching played an important part in producing the fine crops there, the cream of which frequently held high positions as collections at the horticultural exhibitions held in Edinburgh.

Where there are old gardens which have been heavily manured, and no systematic method of trenching adopted, it is sometimes difficult to escape the evils of drought and vermin during adverse seasons, and when judicious trenching is had recourse to the bottom soil may be unsuitable at first for seed-sowing and planting. In such cases we have easily met the difficulty by using sifted material from under the potting bench or waste soil heap. Once, having undertaken to renovate a large old garden where soil was deep and excellent but wanted renovation by trenching, the labourers employed warned us against such an innovation, and what the consequences would be; but experience from former cases induced us to trench and ridge the vacant spaces during winter. When all was well prepared for Carrots, Parsnips, and Onions, the seed was sown and carefully covered with fine soil. Portions of untrenched quarters were also sown, giving a double chance of success. The latter came up vigorously long before the former began to vegetate, giving much satisfaction to the workmen, who were not tardy in giving vent to "Sorry that master would not be guided by us!" As the season went on the crops on the double-dug land came up with vigour and made such rapid growth as I had never seen. The great height of the tops and the immense size of clean roots showed that the right thing had been done—about double the value of produce from the trenched ground compared with the untrenched do. was secured, and the latter was by no means insignificant. Another case on Worcestershire clay and marl, where the trenched ground was rolled over like large boulders, hard like rock when dry, and tough like pitch when wet. At the same time the surface was matted with obnoxious perennial weeds, which were skinned off and turned to the bottom and coated over with salt. Planting and drill-forming were done by aid of spade and pick. Burnt refuse, light soil, and manure added to this untoward soil made it as productive as could be desired. All the shrubberies were newly planted, like the gardens was also new ground. Where trenching was done, and light kindly soil put with the trees and shrubs, growth was rapid, clean, and vigorous; on untrenched ground the growth, as might be expected, was wiry and stunted.—M. TEMPLE.

I HOPE the useful discussion will continue on the management of various soils, and let me advise all interested in the subject to discuss matters with good feeling, also to confine themselves to the plain statement of their own practice, which I will endeavour to do as briefly as possible.

The kitchen garden here was in the worst possible condition when I took charge more than five years ago. One part of it is clay, and though it is on a hill, water stood in footprints for weeks. Upon examination I found the subsoil in a saturated condition, so that when dug about 18 inches deep water would rise. The first work was to drain it, which was done with 4-inch main pipes, the rest being 3-inch drains 3 feet deep, as from

experience I would not use any smaller pipes. After the draining was completed I commenced turning the ground 2 feet deep, placing the second spit of clay into large ridges as the turning progressed. When about a quarter of an acre was finished I commenced burning the soil in this way. We first procured a large piece of wood about 1 foot in diameter, making a hole in the centre for the fire. The large piece of wood was fixed 5 or 6 feet out of the ground. Seven or eight wood faggots were placed round it, then plenty of cord wood or any old refuse wood, packed closely to prevent the clay crumbling amongst the centre wood. Space was left on one side at the bottom for lighting, but previous to placing the faggots we put a good armful of straw or shavings round the centre post. The clay is placed on about 9 inches thick regularly round, on each layer of clay some small coal or breeze is sprinkled, and when finished the heap will look like the letter Y upside down λ . Light it at the base, and when the fire has burnt some time the top will gradually sink down; then throw some small coal over it and more clay, widening the fire if necessary by moving out the base. When these fires are properly managed it would surprise a novice to see the amount of clay they will burn in a fortnight.

Upwards of 500 loads were burnt in this way, and afterwards I had the 2 feet of soil turned again, well mixed with plenty of the burnt clay, which was also forked into the third spit, but that was not brought to the surface. The soil is now open and porous down to the drains. As much gritty and light refuse soil, ashes, &c., as possible was collected and pointed in or spread on the surface, which is important in preventing the ground puddling in winter and wet weather. This soil, which had previously absolutely refused to grow anything fit for the table, has since produced the best Cauliflowers I have ever seen. I have a heap now burning, about forty loads, which will come in for Vines and Peach borders, plants in pots, &c.; in fact nearly all plants thrive in it.—F. H.

CULTURE OF DOUBLE PRIMULAS.

ALL who have to maintain a constant supply of choice flowers during the winter months will find the double varieties of *Primula sinensis* most useful. Under generous treatment they are continually in bloom, and every bud produced is useful. Through the late autumn and winter months the plants should be in a temperature of 50° to 55°, near the glass, supplying them with water carefully, and an occasional dressing of Clay's, Standen's, or Beeson's manures. The ventilator must be well regulated, and on no account subject the plants to a cold draught. Under these conditions the plants will flower freely if they have been well prepared the previous summer.

The propagation of the double *Primula* is effected by cuttings; therefore, as the number of blooms diminishes the plants must not be neglected, and they must be assisted in making a healthy sturdy growth, as if the divisions are weak good results cannot be expected. Towards the end of March slightly stir the surface soil, and then give a top-dressing of equal parts of leaf soil and loam, with a good addition of silver sand, placing it well about the collar of the plants. When water is required apply it through a fine-rose watering pot, which will settle the soil. The growth which is now made will be sturdy, and by the month of May will be in a fit state for propagating. The plants should be turned out of the pots, the soil removed carefully from the roots, and the plants divided into single crowns; in some cases roots will be protruding about the base of the divisions, these being potted separately. Where there are no roots care should be taken that there is a heel of hard growth attached. Each cutting must be placed firmly in a well-drained thumb pot, the soil consisting of equal parts leaf soil, loam, and sand. The cuttings when inserted should have the heel placed above the soil, and if required each cutting must be supported with a small stick to keep it firmly in position until rooted. For cuttings which have no roots a pinch of sand placed about the base of the cutting when being inserted is beneficial.

Plunge the small pots in cocoa-nut fibre refuse in a propagating case, the bottom heat to range from 75° to 80°, and supply sufficient tepid water to settle the soil well about the base of the cutting. Shade the case from sun, and keep it closed, but the light must be removed early every morning for about an hour, which will permit the undue moisture to evaporate. When the cuttings are rooted the light can be removed, or they can be placed out on a close moist bottom.

Those divisions which have roots we place by themselves, as they do not need to be kept so close, and are fit to be potted some time previous to the others. When rooted sufficiently they can be placed into a size larger pot, which will give them a good start. The soil at this repotting consists of equal parts of fibry

loam and leaf soil, with a little silver sand and charcoal. Keep them in the same house until established, when they can be removed to an intermediate temperature. When sufficiently rooted transfer them into 5-inch or large 48-pots, in which they are to flower. They should be well drained, and the soil consist of three parts fibry loam, one part leaf soil, and one part well-pulverised horse manure, with an addition of silver sand and pounded charcoal. Pot the plants as low as the heart will admit. Water carefully with tepid soft water, and when the roots have taken to the fresh soil remove the plants to a frame behind a north wall, but the position must be light and not much shaded, or the foliage will become drawn. Whilst in this position water must be applied carefully, for if the soil is kept too moist the fine hair-like roots will perish. The plants must be shaded from bright sun if needed, and ventilated carefully, as cold draughts must be avoided. The plants may remain in this position until the end of September, when they can be removed to a house and managed under the conditions mentioned at the commencement of these notes.—A. YOUNG.

LIST OF VEGETABLES.

It is said that "In the multitude of councillors there is wisdom," so I now give my idea as to a good list of vegetables on which "B. J. B." can rely. No doubt my seniors can improve on it, but as I try nearly every novelty, I can form a judgment by practical experience of the later introductions.

Beans.—Broad: Green Windsor, Johnson's Wonderful, and for exhibition Webb's Mammoth Longpod. Dwarf: Osborn's Forcing and Monster Negro. Runners: Old Scarlet.

Broccoli.—Veitch's Self-protecting (invaluable), Snow's Winter White, Leamington, and Ledsham's Latest of All.

Beet.—Egyptian, Nutting's Dwarf, and Omega.

Brussels Sprouts.—Veitch's Exhibition.

Kale.—Dwarf Green Curled.

Cabbage.—Early Rainham, Daniel's Defiance, and Allan's Incomparable.

Savoys.—Dwarf Ulm and Victoria.

Cauliflower.—Dean's Snowball and Veitch's Autumn Giant (invaluable).

Carrot.—Horn, Early Nantes, and James' Intermediate.

Cucumber.—Berkshire Champion, and for exhibition Marquis of Lorne. Cool Frame: Sutton's Cluster.

Celery.—Turner's Solid White and Major Clarke's Red.

Leek.—Henry's Prize.

Lettuce.—Paris White, Kingsholm, Hicks' Hardy White, and Veitch's Perfect Gem.

Melon.—Gilbert's Burghley Pet, and Blenheim Orange.

Onion.—Queen, Giant Rocca, Zittau Yellow.

Parasnip.—Elcombe's Improved.

Peas.—William I., Dr. Hogg, Duke of Albany, Sturdy, and Ne Plus Ultra.

Radish.—Wood's Frame, Olive Scarlet, and China Rose.

Turnip.—Early Milan, Early Snowball, and Veitch's Red Globe.

Tomato.—Hathaway's Excelsior, and King Humbert.

Vegetable Marrow.—Hibberd's Prolific.

I trust some of our horticultural giants will give their selections, for I am sure many of your readers would be thankful if they did. I might also suggest that some of the novelties be criticised.—H. S. EASTY.

MANURES FOR PLANTS IN POTS.

THERE are two systems of supplying the food required by plants in pots. One is to continue adding to the soil by repotting into larger pots; the other is to grow the plants in comparatively small pots, and to supply concentrated food as required. The first-named system is less practised now than formerly because of its clumsiness and general inefficiency as compared with the other, and of that I will have nothing to say, but will merely confine my attention to noting the simplest way to feed plants in small pots.

The application of animal manures dissolved in water was for a long time held sway, and to these have been added solutions of soot and guano, which add greatly to the effect of the others. But not one of the many forms of liquid manure prepared from animal excreta, even when assisted by the other materials named, is capable of keeping plants healthy for a lengthened period in pots, the soil in which through course of time becomes reduced to a condition merely of a mechanical holding for the roots. It may be noted here that the simpler the compost employed the more valuable is it as a medium for absorbing and presenting manurial aids to the roots. The reason why I at first discontinued using liquid manure prepared from droppings was chiefly because of the extra labour involved in its use, not so much in preparing it as in carrying and mixing it, especially at seasons when time for watering is short. However, for several years I have preferred chemical manures on account of their greater efficiency as plant foods. That many others have been extending the employment of these is evident from the many concentrated manures

in the market, and which are used almost solely for plants in pots. The first to appear—viz, Standen's manure—has proved very useful. When a plant fails to be benefited by an application of this or any similar manure the safe plan is not to increase the amount of dressing, but to give oftener. A little too much at one time means injury to the plant. Applications at short intervals effect the purpose desired without any bad results following.

To obviate some disadvantages attending the use of artificial manures I purchase the materials and mix them myself. The materials I use are medium superphosphate of lime, sulphate of ammonia, and muriate of potash. A generally effective manure may be composed of superphosphate twelve parts, muriate of potash ten parts, and sulphate of ammonia nine parts. As much of this mixture as will lie on a shilling is sufficient for a 6-inch pot. It is a very curious fact—illustrating the necessity of a well-prepared food for plants—that not one of these materials applied to a partially exhausted soil is of any benefit. I have seen sulphate of ammonia recommended as a good manure for Chrysanthemums. Last autumn we had its inefficiency illustrated in this way. Our manure supply ran out with the exception of a little guano and some of the sulphate of ammonia; but we had sufficient to dress about three dozen pots of Mrs. Rundle, while as many of the same kind had to wait. These I ordered to be watered with guano and soot as the best substitute. In ten days the difference between the two sets of plants was so striking that inquiry was made as to the reason, and then I found that the guano also had given out and sulphate of ammonia was being given as a substitute. The plants were practically starved, and at the time of flowering every plant in each set could be picked out with certainty. The part that the above material plays when given alone is either to quicken other elements into activity that would lie in a state of inactivity (a condition of action and reaction being set up), or if the soil is in a state of comparative exhaustion it does no good whatever. I have occasionally employed it to stimulate growth when I knew that plenty of other food was present, and with good results. Superphosphate sometimes is effective alone, but as a rule it is better to employ these in combination.

Anyone who studies the effects of these manures on plants in pots must be struck with the quickness and surety of their operation. If we apply chemical manures to the soil we are practically at the mercy of the weather. If drought supervenes they lie useless in the soil. If we have cold and wet the plants refuse to grow, and the manures may be washed downwards without much benefit. With plants in pots the case is different. We know exactly the quantity of soil we have to fertilise. We have the roots in so small a space that every portion receives benefit. Although the fact of the soil and roots being subjected to meteorological changes has often been adverted to as inimical to the well-being of plants in pots, we have as opposed to that absolute control of the atmosphere in cases where the plants are grown under glass, and as a consequence know whether roots are active or not, and capable of making use of any food we may present to them.

These manures should always be given as surface dressings shaken thinly over the soil. It is not necessary to stir the surface soil in any way. Under careful routine watering the roots find their way to the surface. They may be employed with safety for all kinds of plants requiring assistance, no matter what their nature, as they supply the elements that plants are always likely to find deficient in soils. The only caution necessary is to be sure not to give too much at one time.—B.

STORING APPLES.

ON looking at our Apple store, February 1st, I was surprised to find many of the summer kinds yet represented by fair specimens, and noted the following:—

KITCHEN.—Old Hawthornden, new ditto, Stirling Castle, Cellini, Ecklinville Seedling, The Queen, Warner's King, Greenups Pippin, Loddington, Waltham Abbey Seedling, Queen Caroline, Small's Admirable, and Manks Codlin.

DESSERT.—Yellow Ingestrie, Red Quarrenden, Gascoyne's Seedling, Cox's Pomona, Worcester Pearmain, Summer Strawberry, Kerry Pippin. (Lord Suffield, Keswick, Domino, and Lord Grosvenor just past).

To the best of my recollection very few of the early Apples were represented at the Apple Congress (October 6th), and I cast about for the reason, as never before have Apples kept with us so well. I believe it to be the fact that they were all allowed to remain on the trees until they were thoroughly ripe, and thus all the cells were formed and set, as I imagine many early soft Apples really decay from shrinking as well as from expansion. It frequently happens that the largest fruit cracks, like a well-boiled Potato in its skin. This is mere conjecture on my part, but next season it can be tested. The Apple store, moreover, is not dark having two windows merely shaded with newspaper. The comparatively equable temperature of the last two or three months of the year may have prevented that "sweating" which no doubt induces decay, but it is further proof of my theory that fruit from open quarters in the nursery taken from trees on the Paradise is much more plump than that from

standard trees on the Crab. May it not be that we pull our early Apples for storing a little too soon, being hurried to action by the few that fall?—GEO. BUNYARD, *Maidstone*.

GARDENIAS TREATED AS BIENNIALS.

ABOUT this time last year I inserted a number of Gardenia cuttings in well-drained 6-inch pots filled with sandy peat and leaf mould with a surfacing of sand. These were then plunged to the rim in sawdust in a handlight placed over some slates resting on the flow pipes in the Gardenia pit, in which the cuttings soon rooted. The young plants were potted singly into small 60's in soil similar to that in which they were rooted, and placed in heat as before until the roots had pushed well into the soil, after which they were shifted into 48's. They were afterwards grown on shelves near the glass in forcing houses and pits, and carefully tended in supplying water at the roots and overhead. Subsequently about the end of July the plants, having nearly filled the 48-sized pots with roots, were transferred into 6 inch pots; this time in three parts of fibry peat and one of loam, with sufficient sand added to render the compost somewhat porous. The soil was pressed firm about the roots, and was thoroughly moist before being employed in the repotting. They were then placed on shelves and walls in forcing houses and pits—in fact in any place where they could have plenty of atmospheric moisture and heat. Water was given to settle the soil about the roots, and they were afterwards shaded from bright sunshine until the roots had taken to the new soil, when it was discontinued, and weak liquid manure was given alternately with clear water until the plants had completed their growth.

About the middle of October they were placed in a cold pit from which frost was excluded by covering the sashes with mats and shutters, and in which they remained for about six weeks. They were subsequently taken into the Camellia house, where, with the exception of forty or fifty plants which are now developing their pearly white and deliciously scented flowers, they still remain in a temperature between 45° and 55°. These plants were not stopped after they were transferred from the 60-sized pots, so that some of them, especially those which were grown in a Cucumber house some distance from the glass and partly in the shade. They made rather long shoots, but owing to the rest accorded to the plants and the partial withholding of moisture they have ripened and are now well set with flower buds. Some of the plants will be placed in our early Melon house early in February, where they will have plenty of heat and atmospheric moisture, and liberal supplies of tepid liquid manure alternately with Beeson's manure at the rate of 3 lbs. to 10 gallons of clear water given to the roots. This will enable them to produce large well-developed blooms to supplement the supply of blooms which the pot plants in the stove and those planted out will yield.

The successional supply of blooms will be afterwards maintained by putting into heat (in succession Melon and Cucumber houses) the remaining portion of plants in the Camellia house at short intervals, and then by the plants now coming into flower yielding a second crop. Thus, each successional batch of plants following in the same order with a second crop of flowers, the supply may be continued uninterruptedly throughout the next twelve months. It can then be supplemented by the produce of plants propagated now, and afterwards treated as indicated above, two-year-old plants being thrown on the fire heap.—H. W. WARD, *Longford Castle*.

ABUTILON THOMPSONI FLORE-PLENO.

THE variegated *Abutilon Thompsoni* is well known in gardens as a useful free-growing plant, and is an especial favourite for sub-tropical beds and similar positions, while its flowers are attractive and brightly coloured. The variety represented in fig. 18 (kindly lent by M. Bruant of Poitiers, Vienne, France, in whose catalogue it is published), is, however, very distinct, the flowers being full and almost globular in form while preserving the other characters of the ordinary type. The outer petals are of the usual form, but the inner ones are smaller, narrower, and very closely packed, giving the flowers a remarkably distinct appearance. In colour they are pleasing, the principal tint being bright orange red, upon which is a delicate veining of crimson.

The variety originated in America, and was, we believe, introduced to England by Messrs. H. Cannell & Sons, Swanley, passing thence to the Continent. It will be welcomed by many as a novelty of great promise, and will probably soon become abundant in gardens.

GRAPE GROS MAROC.

Is Gros Maroc worth growing? This question has been put to me scores of times during the past three years. Both growers for the market and private gardeners seem alike anxious to give it a place in their late vineries, and this desire seems to be strengthened by the many glowing descriptions that have from time to time appeared in the *Journal* and its contemporaries. Professedly it was sent out as a late Grape, warranted to hang (I presume in sound condition) until March. But why it should have taken the late Mr. Rivers, with his keen perception and great knowledge of fruits, some thirty years to discover it to be one of our finest Grapes, is, I venture to say, one of the things "no fellow can understand."

We received Gros Maroc some four or five years ago, and at once grafted it on to Gros Guillaume and West's St. Peter's. Upon both stocks it grew very fast, running out laterals as thick as a man's finger. Its very large thick leathery leaves



Fig. 18.—*Abutilon Thompsoni flore-pleno*.

clearly show that to grow it successfully both ample room and light are necessary for the proper development of the foliage and ripening of the wood, otherwise it will soon prove to be a shy bearer. With us bunches are produced plentiful enough, and there is no difficulty in getting the berries to set well. It is marvellous how a small bunch when in bloom will develop itself when ripe. Some we had last year while in flower measured from 4 to 5 inches, and when cut weighed from 5 lbs. to 5 lbs. 8 ozs., the berries measuring $3\frac{1}{2}$ inches in circumference, covered with the densest of black purple bloom, which, like the Black Hamburg, it soon loses if exposed much to the sun, but if covered with a good canopy of leaves it is retained until the berries shrivel; this with us usually takes place in November. During the autumn months Gros Maroc is a noble-looking Grape, alike handsome in bunch and berry, but here the laudation must stop. There is no getting over the fact that the skin is tough and thick as leather; while when compared with the Black Hamburg the flesh is anything but juicy or refreshing.

Such is my experience of Gros Maroc; others who have sung its praises may have been more successful, and able to prove that it is as good both in favour and keeping qualities as they assert it to be. If so, I would cordially invite them to send samples to you, Mr. Editor, as I feel sure with your usual courtesy you will

give the readers of the Journal the benefit of your matured opinion on such matters. Gros Maroc was sent out as a late Grape, and as such it must be judged.—J. McINDOE.

ESPECIALLY TEAS.

THE curious anomaly of the position of Tea Roses in the schedules of the principal Rose shows as compared with their position in general estimation, must have resulted from some strangely indirect process of reasoning. Perhaps it was said: Truly, the Teas are the loveliest of all the Roses; and therefore meritorious exhibits of them must be rewarded with good prizes, and all possible encouragement must be given to the displaying of as many varieties as possible of this deservedly admired class. Could it have been an enthusiasm of this kind getting a little beyond bounds that compelled the Committee of the National Rose Society to point out that Teas were to be judged as Roses, and were not to have additional marks given to them because they were Teas? But, then, probably it was objected that Teas are so delicate and so difficult to manage, or there are so few varieties worth growing, and so few people grow them, that classes provided for them will add but slightly to the attractions of the Show, and are therefore only worthy of small prizes. So the National Rose Society's injunction above alluded to might really have been drawn forth by these objectors, who, gradually realising that the Teas were being a little hardly used, were disposed to compensate them by allowing them extra marks.

At any rate it is difficult to see any line of argument in favour of the present anomalous position of Tea Roses—namely, that while they are the most admired of all Roses, the prizes offered for them are commonly of about half the value of those offered for an equal number of Hybrid Perpetuals, and the number of varieties requisitioned is never more than twelve, except at one or two of the largest shows, where the nurserymen are asked to contribute eighteen varieties.

Going back no farther than last season (1884), and taking eight shows, the amount of prizes offered for Teas was as nearly as possible half the value of that offered for an equal number of Hybrid Perpetuals; while taking a majority of the schedules of the year (excepting those where an honourable equality is already maintained), the proportion is not less than eight to five in favour of Hybrid Perpetuals.

This is an obvious incongruity; it is as though someone should say, "Tea Roses are the most difficult to grow, their flowers are the most troublesome to preserve from injury, but they are the most popular of Roses and the most beautiful; therefore let us induce their extended culture and encourage their display—by offering the smallest prizes that decency permits!"

Now all mention of the actual amount of any prizes has been avoided, and only relative figures have been given, because there is probably nothing more likely to damage Rose-showing than the encouragement of a tendency to insist on prize money of excessive amount; but quite apart from all considerations of what ought to be the amount of a prize for twelve Roses (which amount may be affected by a thousand and one considerations), if £2 is considered a fair prize for twelve Hybrid Perpetual Roses, why should twelve Teas only be allotted £1? Plants of Tea Roses are more expensive than others, being more trouble to bud; for in budding Teas it is necessary to take buds from wood much less hard than is the case with Hybrid Perpetuals, so that the buds sometimes shrivel before they can be inserted, and their bark being often very thin, they are more liable than others to mishaps. For these and other reasons the price of Tea Rose trees keeps up, and consequently it is a more costly operation to purchase a collection of Teas than of Hybrid Perpetuals; wherefore an exactly opposite proportion in the allotment of prizes to that in vogue should have obtained, to encourage the expenditure of additional means, pains, and skill on the production of these lovely flowers, especially if it were true that they are tender and that but few people grow them. This, however, is happily not the case, many Teas being almost as hardy as Hybrid Perpetuals, and in some ways giving less trouble (for they are not so liable to mildew and do not require so much watering in a dry season); and it has been abundantly proved that at least as far north as Liverpool and as far east as Norfolk, as well as in the west and south—as far as the Azores—the Tea Roses may be cultivated out of doors with complete success.

If ever there were any justification of the assertion that Tea Roses are no great addition to the effective display of an exhibition it has certainly ceased to exist, for blooms of this class are produced fully as large and of as good substance as flowers of the best varieties of Hybrid Perpetuals; and it is always at this section of a show that the ladies—infallible judges of taste—call all the world to witness that it is here that the prize for beauty must be awarded, that the Teas are the Roses.

Again, why should only twelve varieties be allowed to appear at a time in the case of Tea Roses? Perhaps a revulsion of feeling in the matter presently will result in the formation of a class for forty-eight Teas, distinct, though at the present moment anyone who merely suggests such a thing would be ridiculed as advocating the most preposterous folly. Yet this scorn and derision might not be altogether justifiable, for has not Mr. Mawley, in his most valuable "Rose Analysis," contributed to the issue of the Journal for October 23rd, 1884, given a list of forty-eight Teas, the least popular of which was successfully shown as often as such well-known Hybrid Perpetuals as Duc de Rohan and Madame C. Crapelet? Mr. Mawley's list, though containing fifty names, may be considered as of only forty-eight varieties, as two of the names, Alba Rosea and Josephine Malton, are synonymous with Madame Bravy. And it may be further

noted by the way that reckoning these synonyms as Madame Bravy, this Rose appears No. 8 in order of merit; while similarly among the Hybrid Perpetuals Marie Finger rises to No. 11, and Maurice Bernardin to No. 3—a position to bear in mind in selecting the most reliable twelve—or to No. 5 if Sir G. Wolesley be not admitted as synonymous, since some good growers hold that the green wood and brighter colour of this Rose when just expanding make it a distinguishable variety, though slightly older flowers are almost impossible to identify except by the wood, a test which the N. R. S. does not recognise as sufficient distinction. Of these forty-eight Teas perhaps Gloire de Dijon should be relegated to the Hybrid Teas as betraying too much of its Bourbon origin, and Homère, though occasionally beautiful in colour, is uncertain and small; while neither Céline Forestier nor Rêve d'Or have often enough size or substance for exhibition. But to replace them there are Guillot's very fine Hon. Edith Gifford, the dark yellow Madame Eugène Verdier, the dark red Souvenir de Thérèse Levet, and Bennett's highly finished Princess of Wales. And if Triomphe de Rennes and David Pradel are not always large enough, Etendard de Jeanne d'Arc unfolds in the glow of sunset over a reserve force of some twenty varieties, not including the numerous climbing and bud Teas, several of which in a season hostile to the development of varieties like Marie Guillot and La Boule d'Or would stand well enough to show to advantage.

Cato tells us that "Wise men learn more from fools than a fool will learn from wise men," at least it may be hoped that the wise rosarians who are entrusted with the making of schedules at this period will not treat the Teas any worse for a plain statement of the undignified treatment that these most refined of Roses have received at the hands of some committees; nor ignore the possibility that the effective display of an exhibition may be greatly enhanced by the admission of collections of more than the stereotyped "twelve varieties." The Teas are perfectly able to take care of themselves in an even competition; they do not want any handicapping of extra marks *quâ* Teas, nor bribes in the way of extra valuable prizes in consideration of an imagined delicacy of constitution. They only want fair play, that they may not be worse treated than other Roses which have no greater claims to admiration; that Catherine Mermet and Marie Van Houtte and their fair peers—and peeresses De Nadaillac and Du Parc—may not be fubbed off with a few shillings, while their rivals, possibly with Paul Neyron and Madame Nachury or Nardy Frères at the corners, are rewarded with coins of gold, and that a chance may be given, at any rate sometimes, for younger sisters to "come out," but a budding beauty sink into the despair of obscurity merely for lack of opportunity.—THETA.

POTATO TRIALS IN 1884.

As the planting season is near at hand perhaps the results of my trial of over forty varieties of Potatoes may be of some use to your readers. My soil is very light and poor, and of course the long drought and hot weather of last summer were very trying to all my crops, and no doubt in some instances prevented me forming a correct judgment on some of the Potatoes. There are so many new sorts offered to the public now that we can hardly keep up with them. Trying half a dozen new kinds every year is very well, but how are we to increase our purchases at large prices to half a hundred? That being the case, I think it would be well if some growers of new varieties of Potatoes would give their experiences in "our Journal," and thus save many people throwing away their money on Potatoes sent out with a glowing description but which too often prove to be far inferior to the older varieties.

American Purple.—A large cropper, only fair in quality and became diseased.

Beauty of Hebron.—A well-known variety, good in every respect.

Beauty of Kent.—A handsome and free-cropping Potato. It is floury, but boils whole and cuts firm. A very good Potato.

Bedfont Prolific.—Very handsome and fine for exhibition, of good quality and medium cropper.

Carter's Eight Weeks.—A useful second early, floury and of good flavour. Heavy cropper.

Cosmopolitan.—A large handsome Potato of good quality. A free cropper.

Feltham White.—Useful for exhibition. A fair cropper and of good quality.

Harlequin.—Very pretty, but produced no crop, all the tubers being small. It evidently requires a rich soil.

Heather Belle.—A large cropper, with fine Potatoes of fairly good quality.

Improved Peachblow.—Large and ugly. A good cropper, but only suitable for baking.

International Kidney.—Very large and handsome, but of bad quality.

Johnstone's Downshire.—A good hardy field Potato, with a reddish pink skin. Of fair quality and a great cropper.

Lady Truscott.—A good quality Potato. Handsome, and a fair cropper.

Magnet.—A very good Potato, but the tubers ran out of shape very much. Prolific.

Matchless.—A good cropper, handsome and of good quality. I consider this a great acquisition.

Mr. Bresee.—Good for exhibition. Prolific but poor in quality.

Queen of the Valley.—Very fine. A free cropper, producing a number of large handsome Potatoes of good quality.

Sharpe's Duke of Albany.—A good second early, of fine quality and very productive. One of the best.

Sharpe's Victor.—Very early, handsome, of good quality, and a free cropper. Recommended especially for frames.

Snowdrop.—Of the Snowflake type, but an improvement on that variety.

Sutton's Favourite.—This did very badly with me, each tuber when half grown starting shoots bearing others.

Reading Russet.—Excellent in every way, but this very dry season it was too russetty, for many tubers were deeply cracked all over.

Vicar of Laleham.—A good cropper, handsome, and of medium quality.

Clark's Maincrop.—Very productive. Immense tubers. It withstood heat better than all others, It took the disease, but will make a good field Potato.

I grew many varieties, but I am afraid I am trespassing too largely on the Editor's forbearance already. Turning for one moment to Peas, I would advise all to try Abbott's Duke of Albany. It is excellent in every way, and is also a good Pea for exhibition.—H. S. EASTY.

THE ALLAMANDA.

[The following essay by Mr. James Friend, foreman, The Gardens, Iwerne Minster, Shaftesbury, was awarded the prize as the best paper on the cultivation of plants in the recent competition for the prizes offered by Mr. Henry Oxley.]

No other inhabitant of our plant houses furnishes us with such a grand display of bright yellow flowers as this family of Apocynaceous plants. They are all evergreen climbers, and all produce yellow flowers except *A. violacea*, which alone should secure them a place in every collection of stove plants. When once well established they will live for a great number of years, and continue to give a gorgeous display of their freely produced blossoms for at least six or seven months of the year, from early summer until far into the winter months. This is a great boon to those who have to supply a large number of cut flowers, as the blooms can be used in many different ways for room or dinner-table decorations.

The Allamanda is a most valuable plant for exhibition purposes. Few plants are more easily trained into perfect specimens, and no other species furnishes the exhibitor with such a mass of yellow flowers, which, when seen resting on the glossy green foliage, have a most imposing appearance. Although plants trained in this manner lose much of their natural beauty, yet it must be admitted that, like many others of our handsome flowering stove plants, such as the *Dipladenia*, *Bougainvillea*, *Clerodendron Balfourianum*, *Stephanotis*, &c., they would never reach the exhibition tent in the perfect condition we so often see them during the summer and autumn months.

To see the Allamanda in its most natural manner of growth it should be permanently planted out where the temperature is never allowed to fall below 55°, and trained on wires placed horizontally along the roof of the house at a distance of 9 inches or a foot from the glass. When well established and covering a good space of the structure, the shoots being well regulated to show off the blooms to the best advantage, it is a sight not easily forgotten by all lovers of flowers.

Allamandas can be easily propagated by cuttings, which will root freely almost any season of the year, either in a propagating frame or under a bellglass where a bottom heat of 70° to 80° can be obtained. The early spring, as soon as the shoots are from 2 to 3 inches in length and can be taken off with a heel, is the best time to accomplish this work. Insert them singly in thumb pots, in a compost of peat and sand, pressed firmly, well watered, and plunged in the propagating frame, well attended as to shade, &c. In about a month they will have filled their small pots with roots, and should be transferred into 3-inch pots, adding to the peat and sand one part good fibrous loam, again returning them to the propagating frame. Do not plunge them as before, but stand them on the plunging material. In a few days they will have taken well hold of their fresh compost, and can gradually be inured to the general temperature of the house. As soon as the roots have filled the pots the plants should be placed in 6-inch pots, and at this and all future pottings peat should wholly be dispensed with; a compost I have found to answer well being three parts good loam to one of cow manure, with a liberal addition of charcoal. Being water-loving plants when growing freely, a thoroughly good and lasting drainage must at all times be given them. At this period of their growth it must be determined what position and shape they are finally to take; if for training on the roof as before described they will at present need no stopping, but grown on with single stem until they reach the desired height where to be trained horizontally under the roof, when their points may be pinched out. As soon as they have started into fresh growth after being stopped, they should be planted in their permanent quarters, making a good drainage, and employing as a compost three parts good fibrous loam to one of cow manure. Do not give them too much soil at first, but occasional top-dressings as often as the

roots come to the surface will be found more beneficial to them, as the whole mass given at one time would get into a sour unhealthy state ere the young roots had fully taken possession of it.

On the other hand, should the young plants be required for trained specimens, they will need stopping twice or three times the first season to ensure a thorough foundation to work upon. At each potting process the soil must be thoroughly and firmly worked between the ball and the sides of the pot, using the same compost as before described, with the addition of a little charcoal. By the end of the season they should have filled pots 10 inches in diameter, with good active healthy roots, which will be found large enough to winter them in, as they will make but little progress from October until the end of January, during which time but little water should be given—just sufficient to keep their wood plump and to keep some of their foliage in a healthy state.

By the end of January each of the growths should be lightly pruned to encourage fresh breaks from the best ripened wood. As soon as they are well started into growth, the breaks being about an inch in length, place the plants in their flowering pots, about 16 inches in diameter, which will be ample for the development of a good-sized specimen. As soon as potted the trellis or training sticks should be added, that of a balloon shape being preferable, the growths being carefully tied on. No farther training will be necessary while making their growth, allowing them plenty of light and space to encourage strong, sturdy, and well-ripened shoots. As soon as they commence to show flowers their training must be taken in hand, which must be done very carefully and periodically, being so arranged, that when the flowers are fully expanded they will show to the best advantage in the position allotted to them.

Old plants will not require larger shifts every year, but after being well cut back to about three eyes of the old wood and started into fresh growth in the spring, they can be taken from their pots, and some of the old ball reduced with a pointed stick. Their drainage must be newly arranged, returning them to the same sized pot as before. When well into active growth they will require some stimulant, either in the shape of liquid manure or top-dressings with chemical manure.

Allamandas require but little shading, only just sufficient to keep their foliage from scorching during July and the beginning of August. Another great point in their successful cultivation is cleanliness, which in fact applies to all plant life, and unless carried out thoroughly and effectually it is impossible to procure them in good condition at any period. Allamandas are not so subject to insect pests as are many of our stove plants, being most liable to the attacks of thrips and red spider, both of which can be kept in check should they appear, the former by fumigation with tobacco paper, the latter by the liberal use of the syringe. Should scale or mealy bug gain a footing, the bug can be washed off with soft water and petroleum, using a wineglassful of the latter to four gallons of water, thoroughly mixing it before applying it to the plants. Scale should be picked off by hand. The cultivator must always keep a sharp look-out for all such pests when attending to the daily wants of these plants, and should any be perceived their destruction should at once be attended to.

There are several well-known Allamandas, and most of them are worthy of cultivation, the best, in my opinion, for the purposes above described, being *A. Hendersonii*, *A. Chelsonii*, *A. nobilis*, and *A. grandiflora*. The last-named is much weaker in growth than any of the others, and is much improved by being grafted on one of the robust varieties, but where space is a consideration it is invaluable, as it can be grown much more limited in that respect, being less scandent in habit.

BRUSSELS SPROUTS.

THE time will soon be here again for sowing seed of these, and it should be ordered at once, but in considering this it must puzzle many what to do. True, Brussels Sprouts have not yet become as numerous as Cabbages or Peas, but there are several named varieties which may be placed under two very distinct types. One is the small old-fashioned Sprout with buttons closely set from the bottom to the top of the stems, firm, hardy, and excellently flavoured. The other type grows 4 feet or so in height, produces sprouts almost as large as one's fist thinly along the stems, which are never very hardy, and when boiled they look like a dish of mashed Cabbage. Size alone is the recommendation of these, and those who put this above everything will know what to grow, but all lovers of perfect Brussels Sprouts should grow the small type, as it is in every way the best. We have tried all the new and improved varieties, and speak from experience.

Brussels Sprouts are a very important crop with us as our main supply of vegetables, and a very extensive one is wanted in the winter months,

and were the large sprouts the best, we should soon have found it to our advantage to grow them, but we did not. This winter we have some thousands of hearing plants of the old Dalkeith variety, and they are exceedingly good, being small, compact, hard, and excellent in flavour, and they turn out whole after boiling—a very important point. Next to the Dalkeith I would place Scrymgeour's and Webb's Matchless, which is a very desirable form.—A KITCHEN GARDENER.

NATIONAL AURICULA AND NATIONAL CARNATION AND PICOTEE SOCIETIES (SOUTHERN SECTION).

IN reference to my vote at the meeting on December 9th, I desire now to state that I joined the Societies a month before the meeting, as the Secretary's receipt fully shows. I did not join with the intention of opposing any individual, and as showing conclusively that I had no personal animus against either Mr. Dodwell or Mr. Dean, I voted with them on one division and against Mr. Douglas. Mr. Dodwell having acknowledged his mistake, I have only to add that I have received the following satisfactory letter from Mr. Richard Dean:—

"Ealing, London, W.
"January 30th, 1885.

"To Mr. J. Wright,
"of the *Journal of Horticulture*,
"171, Fleet Street, E.C.

"DEAR SIR,—The *Journal of Horticulture* of yesterday's date has just reached me, and I am made aware for the first time of the fact that Mr. E. S. Dodwell was in error in applying the term "fraud" to your vote on December 9th last.

"In making the public statement I did in reference to your vote on this occasion, I did so on the authority of Mr. Dodwell as the Treasurer of the Societies, and in the full belief it was correct. But I cannot allow him to stand alone in acknowledging the error and offering you an apology. I therefore tender you my expression of regret, and I do it unreservedly and of my own free will.

"You are at liberty to make any use of this letter you please.

"I am, dear sir,
"Yours very faithfully,
"RICHARD DEAN."

This closes the comedy of errors, and I am glad to feel without any prejudice to private friendship. My hope is that the Societies will receive such support as will render them prosperous, and I think there need be no apprehension that in future harmony will not prevail among the members.—J. WRIGHT.

THE GERMINATION OF SEEDS.

(Continued from page 85.)

[A lecture delivered before the Institute of Agriculture, South Kensington, March 31st, 1884, by Professor G. T. Bettany, M.A., B.Sc., F.L.S.]

HAVING now reviewed the condition of the seed when ripe, let us determine what shall be regarded as the close of germination. One way of determining this is to take the period when the plant would die if grown in the dark as the end of germination. For it is well known that seeds can germinate completely in the dark if supplied with a sufficient quantity of water and kept at a suitable temperature. As an actual fact it is found that most plants begin to take up food from the air by green leaves considerably before all the reserve food in their seeds has been used up. Gradually they pass from the condition of germination to that of youthful independence; and perhaps the best definition of the cessation of germination is that period when the young plant ceases to draw upon the reserve in the seed.

The young Turnip or Wheat plants, springing from comparatively small seeds, are much earlier independent than Peas or Beans. So also the Maize, grown in the dark, has such a considerable store in its seed that it can live for seven or eight weeks, and then the embryo food is found to be used up.

Between these two extremes of the ripe, hard, dry seed and the young plant in vigorous life with a strong hold upon the earth by means of numerous root-fibres and a multiplicity of absorbing root-hairs, with a succulent stem growing every day firmer and more capable of supporting the weight of numerous leaves, and with leaves in sufficient abundance to abstract enough carbon for the building-up of the plant substance from the air, we have to survey the changes, material, chemical, or other, which occur.

The first thing necessary to the germinating seed is water. Until the seed has swelled it cannot be said to be started on its course of germination. The seed, on an average, may contain about 10 per cent. of water, much of it involved in the very chemical structure of the starch, cell-membrane, and aluminoids of which it is composed. This is nothing like sufficient as a medium with which to carry on active changes. The amount of water absorbed by seeds before the commencement of germination proper is—Wheat, 45 per cent.; Maize, 40 per cent.; Peas, 106 per cent.; various Beans, 100 per cent.: 1000 grammes of air-dry Kidney Beans containing 12 per cent. of water were weighed, and after twenty-four hours' soaking in water the cotyledons contained 767 grammes of dry substance and 1004 grammes of water. When the skin and radicle had got well developed, the cotyledons contained 708 grammes of dry substance and 1397 grammes of water. When the cotyledons had become green, and emerged from the seed-skin, they contained 508 grammes of dry substance and 1816 grammes of water. At the end of germination, when the cotyledons had very much shrunk, they contained 228 grammes of dry substance and 1772 grammes of water. Comparing the relations of

water to the cotyledons and to the rest of the embryo—namely, the young bud, stem, and root, minus the cotyledons, at the end of twenty-four hours' soaking, the embryos, minus cotyledons, contained 5 grammes of dry substance and 11 grammes of water. When the stem and radicle had become well developed the same gave 18 grammes dry substance and 180 grammes of water; at the third period 107 grammes of dry substance and 1247 grammes of water; at the end of germination, 283 grammes of dry substance and 3222 grammes of water.

This will suffice to show the enormous importance of water in germination, constituting nine-tenths of the weight of the plant at its close, and furnishing the most striking contrast to the condition of the ripe seed. It is impossible, indeed, to over-estimate the necessity of a suitable abundance of water in securing satisfactory germination. The plant will not in so doing take up more than it can dispose of. It puts all its water to the best use, as the vehicle of all the transport of material that necessarily takes place in it, as a necessary ingredient in the living and moving protoplasm of its cells, and in enabling the reserve materials of the seed to take a soluble form. Only one other ingredient from outside is essential to the progress of germination, and that is oxygen. The access of free atmospheric oxygen is as needful for the young plant as for the young animal.

It follows from this that seeds must not be too deeply buried, otherwise the access of oxygen may be too limited for their proper development, in addition to the amount of the sun's heat growing deficient as we recede from the surface. Some interesting experiments have been made to decide at what depth below the surface the largest proportion of seeds would germinate. In the case of Cat's-tail Grass (*Phleum pratense*), 100 per cent. germinated at four-tenths of an inch deep; the proportion diminished to 92 per cent. at 1½ inch deep, when a great fall was observed; and between a depth of 3 and 5 inches, less than one-third of the seeds germinated. In regard to Indian Corn, there was a considerable difference; less than half came up when laid close to the surface, two-thirds sprouted at 1 inch or more beneath, while the full per-centage only germinated when the seeds were buried 3 inches deep. With Trifolium, again, the greatest number sprouted when sown close to the surface, within half an inch; while, when they were buried 1½ inch, only one-sixth were successful. On the whole, there is preponderant evidence in favour of seeds being sown near the surface as to their probabilities of successful germination; although in practical agriculture this matter is, we are only too well aware, complicated by the risk of their being eaten by birds and other enemies, who often get much more of our carefully stored and selected seeds than are allowed to reproduce their kind.

But another consideration enters into this matter of the depth to which seeds may be buried, and this must be referred to later in speaking of the relative size of seeds. At the present moment it is desirable to speak of the mineral ash present in all seeds, associated with the cell-membrane, the starch, and most especially the albuminous or nitrogenous matters of the seed. Although it is not known precisely in what way the salts constituting the ash are associated with or essential to the life of the plant, it is quite certain that they are essential, and even that during germination an additional quantity becomes absorbed. The total ash of ripe seeds varies from 2 to 4 per cent. of the dry weight. In winter Wheat one-third of this quantity was found to be potash, and nearly one-half phosphoric acid in a combined form. One-eighth was magnesia; and there is no mistaking the significance of the potash, the magnesia, and the phosphate, as showing that a due supply of these ingredients is of the highest importance to the formation of suitable seeds. It is evident that there is a close connection between the nitrogenous bodies and phosphates, although it is impossible at present to say with confidence what the relation may be. But, as an actual fact, germination is impossible without this ash, and without its travelling from the situations in which it occurs in the ripe seed to those new parts which soon begin to appear when germination has set in. Other ingredients of the ash of Wheat, in much smaller quantities than the three principal ones I have mentioned, are soda, lime, iron, oxide, silica, and a little chlorine and sulphur. In Peas we find more potash than in Wheat, and less phosphate and magnesia, but both the lime and the sulphur are in larger proportion.

(To be continued.)



THE schedules of the NATIONAL CARNATION, PICOTEE, AND AURICULA SOCIETIES (Southern Section) are now issued, and from them it appears that the dates of the respective shows are—the Auriculas on April 21st, and the Carnations on July 28th, both to be held in the conservatory of the Royal Horticultural Society, South Kensington.

— AT the annual meeting of the WIRRAL ROSE SOCIETY it was decided that the next Show be held in Hamilton Square, Birkenhead, Cheshire, on Saturday, 18th July, 1885, and also that in future the gold medal of the National Rose Society be open for competition to all amateurs in Lancashire and Cheshire, and no longer formerly to those

residing in the hundred of Wirral, and ten miles round the Liverpool Exchange only.

THE great family of CACTACEOUS PLANTS includes the most curious forms in the vegetable world, while not a few of them are remarkable by the beauty of their flowers. These plants have been neglected of late, but they yet have many admirers, and will possibly have more. Mr. Lewis Castle's treatise, which is now being issued, will be welcomed by many, not because it is the only work of its kind published in this country, but because it is good. It affords evidence of much research, and is replete with historical, botanical, and practical matter throughout the ninety pages. It is illustrated with examples of the different genera, and contains a tabulated list indicating the works in which between 200 or 300 species are figured. Whether readers of garden literature are specially interested in Cactaceous plants or not, we shall be surprised if this neat shilling volume does not meet with general acceptance, and find a place in most garden libraries.

— MESSRS. J. CARTER & CO., High Holborn, send us the following letter upon GARDENING AT THE ANTIPODES, which they have received from a correspondent in Brighton, Tasmania.

“December 2nd, 1884.

“We are having another terrible season; no rain at all; everything dried up, so that gardening is a toil, especially when the water holes (four) are dried up, and one has to go half a mile for creek water, and the water there is as hard as iron and alum can make it. With regard to the seeds you sent me they are doing admirably, a great contrast to those obtained here. The Golden Tripoli seems to be a first-class Onion, a very rapid grower, and a pretty plant in shape of bulb and delicate green of stalk. On referring to my diary I find that my colonial Onion seed was sown latter end of May, and again on July 7th, whilst the Golden Tripoli was sown on August 29th, and the Golden Tropoli is now a long way ahead of either the other two, although no more attention has been given it. The Dedham Favourite Tomato is a splendid plant, very hardy, more so than the sort we get here; it stands both the sun and frost, and we had three very severe frosts only a fortnight ago, two days after I planted them out. I fully expected to find them cut down, as they had no protection save a few “sags” strewn over them. The Asters and Balsams are looking very healthy, with the exception of the White Aster, which were upset during my absence and destroyed. I hope to be ready in time for the summer show, as I intend to exhibit the Golden Tomato, Dedham Favourite, and Grapeshot, which has very pretty foliage, the latter two both in pots, as fruits, with Asters and Balsams. Another friend of mine is going to join me in sending out for all our next season's supply.”

— WE have received a prospectus of the SOCIETY OF AMERICAN FLORISTS, which is being formed in the United States with the support of some of the leading horticulturists, and under the presidency of Mr. John Thorpe, Queens, New York. The general plan is to have a yearly meeting and exhibition, at which papers will be read upon practical subjects, medals and certificates being awarded for meritorious exhibits and new plants. It is also intended to form a “Hail Insurance Fund” to secure members against losses occasioned by storms. The Secretary is Mr. E. G. Hill, Richmond, Indiana.

— THE district of Manchester has lost one of its most notable horticulturists by the death of MR. JOHN STEVENSON, which took place at his residence, Timperley, Cheshire, on January 23rd, aged 62, after a lingering illness of nearly twelve months. The late Mr. Stephenson will best be remembered as a constant exhibitor of large stove and greenhouse plants, Ferns, and Orchids, at most of the leading exhibitions in the kingdom, when he had such growers as Mr. Thos. Baines and Mr. Cole to compete against. He was liked by all who knew him, and has often visited young gardeners, upon their first taking situations, to give valuable advice and encouragement. His good-humoured face will long be missed at the shows round Manchester, for although not an exhibitor of late years, he was a constant attendant, very often in the capacity of judge.

— “M.” writes as follows respecting RHODODENDRON COUNTESS OF HADDINGTON:—“This is one of the best of the greenhouse Rhododendrons. There are some brighter, but none that I know which bloom so freely in small pots. Of late we have had some plants of it in flower in 6-inch pots. They are from 12 inches to 18 inches in height, and very bushy. They made their growths in a cool sunny house near the glass, and we put them into a gentle forcing pit to induce them to bloom in the end of December. There was a flower bud at the end of every shoot, and these developed four, five, and six blooms each. They are massive, tube-shaped, blush white, and very fragrant. They are capital for placing in stands in rooms, and when the blooms are cut and wired they are very effective in bouquets or any cut-flower arrangement. We find them as useful and as much appreciated as any plants we have in flower at this season, and a few plants would be of great service in all gardens. They grow best in a mixture of pure peat and silver sand. The best time

to pot them is just after flowering. When the growth is young and tender they should be kept in rather a close warm place, but in summer, and especially in autumn, they should be freely exposed to the air and fully to the sun.”

— “VECTIS” sends the following query respecting PRUNING THE DUKE OF BUCCLEUCH GRAPE—“In the *Gardener* of November, 1882, the Editor says in reference to the Duke of Buccleuch, ‘not to prune too closely, or crop it on young rods.’ Mr. Thomson, if he should read this, will perhaps kindly state if his meaning is that a young rod of last year's growth should be allowed to form spurs this year, and all bunches that show be taken off, the rod being cropped next year. I have no doubt Mr. McIndoe, Mr. Witherspoon, and others could give very valuable hints respecting the pruning and treatment of this grand Grape that would be much appreciated by many of your readers as well as myself.”

— MR. GLADSTONE AT NORRIS GREEN.—On his recent visit to Mrs. Pemberton Heywood on the 30th ult., the Premier planted a purple Beech tree in the grounds at Norris Green. Mr. Bardney was introduced to Mr. Gladstone, and after a hearty handshaking and a few pleasant words, handed a new polished spade to the Right Honourable gentleman, who used it in a workmanlike manner, planting the tree thoroughly well. This is Mr. Gladstone's third visit to Norris Green, but on previous occasions he took exercise in felling some of the trees that were too crowded in the pleasure grounds. Mr. Bardney understood Mr. Gladstone to say he is in possession of a new system for making lawn tennis grounds but its precise nature did not transpire.

— A WICKLOW correspondent writes—“I have read with attention the various letters on TRENCHING GROUND which have recently appeared in your paper. How to reconcile the various opinions I know not, but this I believe all will agree in, that a deep rich soil will produce better crops than a shallow soil, due care being taken as to rotation of crops. I observed last summer that only on deep soils were there good crops of vegetables, or, indeed, of farm produce. I quite agree that much can be done in gardening by timely mulching.”

— INTERNATIONAL EXHIBITION AT BUENOS AYRES.—The Argentine Rural Society are making arrangements to hold an extensive Rural Exhibition in Buenos Ayres in 1886, which will be opened on April 25th of that year, and continue until the following 24th of May. The prizes will consist of gold, silver, and bronze medals, which are offered for cattle, vegetable, and miscellaneous food products, machinery, and models of buildings employed in farming. A total of 421 classes are enumerated in the schedules now being issued.

— DR. ALEXANDER PATERSON, Fernfield, Bridge of Allen, N.B., sends us an extremely fine spike of LÆLIA SUPERBIENS from a plant bearing four similar spikes. The flower stem itself is 6 feet in length, and bears near its apex a dozen large and richly coloured flowers, giving ample indication of the vigour of the plant and the good culture it receives. This Lælia is remarkable for the length of its flower spike; but though it is usually described as from 4 to 5 feet, it occasionally exceeds that, as in the example mentioned. There are few Orchids, except some of the Oncidiums, which produce spikes of such great length, and in the case of the Oncidiums is slightly different, as the flowers are scattered along the stem from near the base to the apex; whereas in Lælia superbiens the flowers are clustered at the point. What special advantage the latter character is to the plant it would not be easy to determine, but we might surmise that it is connected in some way with the fertilisation.

— MR. J. REID states that “GRAPE MUSCAT HAMBURGH is a great bearer, and has produced a large crop with me. Its usual fault is shanking, which has induced many excellent Grape-growers to remove it from the vinery, as where other sorts proved successful this one has failed. It has often been supposed that the borders being overcharged with moisture was the cause of failure. However, experience has proved that opinion to be wrong, for Vines planted in outside borders without protection succeeded better than those planted inside the vinery; here this Grape fertilises itself perfectly without assistance, and produces very large bunches, which require to be well thinned to allow of the large pointed berries coming to full size. I believe this Vine to be more hardy than any of the Muscat Vines, and it might succeed in the warm end of an ordinary vinery. It is best suited for early summer use.”

— AN AUSTRALIAN FERN PARADISE.—The Blue Mountain range in New South Wales is much frequented by Fern-hunters, especially in the

vicinity of Mount Wilson, where the summit of the ridge is largely covered with a dense growth of Eucalypti, the mere trunks of which almost obscure the horizon, and in the undergrowth it is no exaggeration to say that thousands of Tree Ferns, ranging up to 30 feet in height, are visible in every direction. It is on the southern slopes that the Sassafras jungle is found, in which Mosses and Orchids luxuriate, and festoons of Lianes hang from the topmost branches. There are two peculiarities in this vegetation which are worthy of notice; first, that the Tree Ferns (*Alsophila australis*) frequently bifurcate at a short distance from the ground, and in many cases divide into three or four, and sometimes into five and six stems, from one root; second, that Tree Ferns (which must be of very ancient date) are frequently almost entirely absorbed by the growth of forest trees (*Quintinia Sieberii*) which germinating in the axils of their fronds, send down suckers to the ground, and enclose within their solid timber the Fern stems from which they derived their first support. In some cases are seen Ferns which, having attained a growth of 20 feet in height, have been laid low by the wind, and where some portions of their heads have touched the ground a second growth of equal altitude has succeeded, which, in its turn, has been subsequently enclosed by a *Quintinia* of large diameter, while the roots of the original Tree Fern still retain their vitality.

— THE first volume of the "ILLUSTRATED DICTIONARY OF GARDENING" (L. Upcott Gill, 170, Strand) is issued, and forms a handsome volume, comprising 544 pages (from A to E) of closely printed matter. It is edited by Mr. George Nicholson, assisted by Messrs. W. Watson and J. Garrett, the former contributing articles on special subjects, and the latter on fruits, vegetables, and general garden work. Mr. S. C. Mosley, F.Z.S., has revised the entomological portion, the Rev. Percy M. Myles, M.A., having determined the derivation of many of the generic names. The work is liberally illustrated, the nomenclature accurate, the cultural instruction reliable, and altogether it is a very useful book.

BEEF AND BRUSSELS SPROUTS.

I NOTICED in a recent issue of the Journal that Mr. Iggulden depreciates Pragnell's Exhibition and Veitch's Improved Black Beets because of the great size to which they grow, and adds that these should not be sown earlier than the beginning of May. I am unacquainted with the first-named, but the other we have has beautiful medium-sized roots, colour first-rate, and flavour excellent. Instead of sowing in the beginning of May this and another large-growing sort were not sown until the 18th of June. I imagine if Mr. Iggulden adopts a later date to sow these that he will not be disappointed with the produce. I may add that Dell's Crimson with us requires to be sown about the end of April.

I should esteem it a great favour if some of your readers would suggest a plan whereby we could be sure of small bullet-like Brussels Sprouts. I have tried poor soil without effect, and the various varieties offered in seed catalogues all have the tendency to come too "cabbagy" for the dining table. Aigburth is one of the worst in that respect.—R. P. BROTHERSTON.

"NATURALLY" GROWN CHRYSANTHEMUMS.

MR. MOLYNEUX may rest assured that perfectly good blooms of Elaine and other Chrysanthemums may be grown for home purposes without disbudding the plants. We do not obtain such large flowers, but, what is of more importance, we get a greater number of them. I quite agree with your correspondent that some sorts, such as Elaine, Peter the Great, and other good Japanese varieties, will not form bushy plants without some form of stopping; the system that on the whole gives the best results being that of cutting back to firm growth in June, when several strong shoots are produced. At the same time "naturally" grown plants with single stems producing several breaks late in summer, and with foliage to the rim of the pot, need not be so uncommon an occurrence. Anyone growing plants under cool conditions employing a strong loam and manure, with attention to watering, will have no cause to be disappointed with naturally grown plants. At least, that has been my experience. The fact is that a system of striking the cuttings in heat, and growing the plants throughout the spring months in houses, appears to be the failing with many country gardeners in their treatment of Chrysanthemums. No after treatment can ever undo the mischief thus caused.—B.

A PARRAMATTA ORANGERY.—With the exception of Sydney, Parramatta is the oldest town in Australia, and was, in the early days of New South Wales, the principal residence of the Governor. It is now principally famous for its orchards and orangeries, the origin of the latter being due in some measure to chance, the dried pips of an Orange having been sown during the early days of the township, thus making known the exceptional suitability of the district for the growth of this valuable fruit. Perhaps many of the largest trees in the world are here, some more than fifty years old, in the most perfect health and luxuriance of growth. Some idea may be formed of their productiveness when it is

mentioned that from several of these trees a crop of more than four hundred dozens of marketable fruit has been gathered in a single season. A writer, alluding to this feature of the district, says:—"To those who have not seen the Orange growing in a congenial home, or who may but have seen it under the rude culture of some of the continental growers, a visit to the celebrated estate of Mr. Pye, of Rocky Hall, is not likely to be soon forgotten. Here may be seen growing every variety of the Orange and Lemon, and the other members of the Citrus family, from the tiny Cumquat to the gigantic Shaddock; and, as illustrative of the capability of the climate and the vast range of fruit-yielding trees that may be grown to advantage hereabouts, we may mention that in close proximity to the Orange may be seen the Apple, Pear, and Plum of northern latitudes; the Peach, Apricot, and Nectarine of the east; the Loquat of Japan, and almost every fruit-yielding shrub or tree, growing in the wildest luxuriance. It is a great treat to catch Mr. Pye on some leisure day, and in a pleasant stroll hear from him the life history of some of the special trees in his grove—how this one tree yielded several hundred dozens of fruit in a season; how that group of trees were planted fifty years ago, and still, like their proprietor, seem ruddy with health. It must be glorious to be the owner of an orchard which, as a lad, one has helped to plant, and grown old in tending. And then there is the supreme satisfaction of knowing that the industry has grown to be one of vast commercial importance, for one has only to look at the piles of cases of this fruit awaiting transit at the Sydney wharves to realise how great an element of wealth this product has become."

CALANTHE VEITCHII, RANGEMORE VARIETY.

ONE of the most successful and useful of the numerous hybrid Orchids raised by Mr. Dominy is that which bears the name of the firm for whom he produced such striking results. *Calanthe Veitchii* has long since taken its place amongst the few Orchids that have found general favour in gardens, and with its relative, *C. vestita*, it is now much esteemed for decorative purposes in the stove or Orchid houses. Regarding it simply in a utilitarian point of view, it is a plant of much importance, but when its history and characters are considered it is found to be one of the most remarkable and interesting Orchids that have originated in cultivation.

The two species of Orchids, *Calanthe vestita* and *Limatodes rosea*, each possess attractions of no mean value, but it was a happy idea that induced Mr. J. Dominy to endeavour to obtain a cross between them, and the result proved the correctness of his views that a handsome useful plant could be produced by a union of their respective characters. It was remarked last week, when describing *Cypripedium Leeanum superbum*, that this showed in a strange manner the influence of the two parents, but in the case of *Calanthe Veitchii* this is perhaps still more marked. Here we have two genera concerned in the production of the hybrid, and bigeneric hybrids always possess exceptional interest to the student of fertilisation. There is, however, a great difference in the value of generic characters, and it sometimes happens that there is less essential difference between species of two distinct genera than between some species in one large or greatly varying genus. It generally happens that the nearer allied are the plants to be crossed the more likely are the efforts of the hybridiser to be successful, which could be exemplified in many families of plants, but it can be seen in the Orchids as well as any other. Few bigeneric hybrids have been obtained amongst them, and these few have chiefly been between *Laelias* and *Cattleyas*, which it is well known differ very slightly from each other, the number of pollen-masses determining to which genus a particular species belongs, though that is sometimes rendered difficult by the variability of even this character. So it is with the *Limatodes rosea* and *Calanthe vestita*, which were employed in the production of the hybrid under notice. The difference in structure is slight, though the two plants are readily distinguished. *C. vestita* has short conical pseudo-bulbs, a long loose raceme of flowers, in which the lip is four-lobed and adherent to the rather long column, the colour being white with a yellow or red ring in the centre of the lip, the flower stems being densely covered with long soft hairs. *Limatodes rosea*, on the other hand, has long fusiform or spindle-shaped pseudo-bulbs, which are partly contracted near the apex, giving them a bottle-like appearance; the racemes are similar to *C. vestita*, but the flowers differ in two or three points. For instance, the lip is not lobed, but entire and of an oval form; it is not united to the column, but is folded round it at the base, this organ being also much shorter than it is in *C. vestita*, the colour being a uniform rose tint. These are the leading features of the two species, and will be seen at a glance that though amply sufficient to separate them, they are not of that marked structural character which would be likely to render crossing between them at all difficult. The pollen was taken from *C. vestita*, *Limatodes* being made the seed-bearing parent, and when after some careful nursing the resultant hybrid flowered in 1859, it was at once seen that a most curious intermixing of the distinguishing characters had been effected. *C. Veitchii* possesses the pseudo-bulbs of the *Calanthe* slightly enlarged, an imperfectly bilobed lip, which partly clasps the short column, as in the *Limatodes*, and the colour is a bright rose hue, like the last-named species. There is thus a slight preponderance of characters in favour of the seed-bearing plant, but the cross is undoubted.

These facts have been referred to at some length to render clearer an explanation of the beautiful variety represented in the woodcut, fig. 19, which was sketched from a raceme sent to this office by Mr. W. Bennett, Rangemore Gardens, Burton-on-Trent. It shows in a remarkable degree a partial reversion to the *Limatodes* and at the same time there is in the lip more traces of the *Calanthe* parentage than in the ordinary form. The sepals and petals are similar to the *Limatodes* in form and colour, being

bright rose, but the lip is white or of a most delicate blush tint, not only partly bilobed, but with a distinctly undulated margin, which where the infolding is deep appears like an approach to the four-lobed lip of the *Calanthe vestita*. Another curious character is the manner in which the flowers are arranged in the raceme, being much closer together and chiefly to one side of the flower stem, imparting a clustered appearance to the inflorescence. Writing in reference to the plant, Mr. Bennett observes:—"This *Calanthe* has a curious history. For some seasons our *Calanthes* have not bloomed for three years; this season they have done fairly well. They have been here for thirteen years, or before I came to the place. This season I exchanged some *Eucharis* with a neighbouring gardener for some *Calanthe Veitchii*. These have bloomed with ours, and, seeing the two together, the distinction is so great no one could help noticing it. Hence my sending you and others a bloom. We have thus had this

sidered by many superior in attractions, while for arranging either with the ordinary form or its parent *C. vestita* it must prove most valuable.

VINERIES.

ALL things relating to vinerias and the use to which they are generally put in connection with the production of Grapes were carefully considered at the time my notes on this subject were penned. They were also well thought over before the range of vinerias and conservatory erected here some few years since by Messrs. Weeks & Co. of Chelsea were heated. The result was that the pipes were fixed in the customary way—viz., four 16 inches from the front wall and two 5 feet from the back one; and that this distribution of the heating surface has given me the utmost satisfaction. Hence my reason in recommending the pipes



Fig. 19.—*CALANTHE VEITCHII*, Rangemore variety.

variety for thirteen years without knowing it was so distinct. It is a time of year that I seldom move from home, and I do not know the time when I have seen *Calanthes* in bloom elsewhere. I have been comparing a small spike or two that is left, and they bear out most remarkably all the points you name, and they are all alike, therefore constant."

Slight variations in colour are common amongst a number of plants of *C. Veitchii*, and seemed to be influenced to a certain extent by cultural differences, but so well marked a form as this we have not previously seen, though it is often said that there are two forms of the plant. This one is, however, so clearly different from the ordinary type, that it may be appropriately named the Rangemore variety. Beautiful as the well-known hybrid is, that now illustrated presents such a delicate and pleasing contrast in the white lip and rosy sepals, that it would be con-

being so fixed. And having read Mr. Molyneux's note in reference to this subject at page 83, I fail to recognise his plan as "a better way" of distributing the said pipes. Fixed as he advises, though the heat may be better equalised over the house and the Vines be less liable to the attacks of red spider in consequence, the work of making or renovating the border must be considerably impeded by having to perform it through a trellis-work of piping. Moreover, the attacks of red spider, sometimes resulting from the heat necessary for the production of Grapes being somewhat centralised, can be prevented by evaporating pans forming part of the flow pipes being kept filled with liquid manure. The ammonia arising therefrom is antagonistic to insect life as well as being beneficial to the Vines by reason of their inhaling it through their leaves.

Mr. Molyneux further objects to the pipes being placed as recommended by me on the score that the Vines are more forward in the neigh-

bourhood of the pipes. I grant that a few of the bunches nearest to the pipes may be ripe a few days earlier than those situated midway on the Vine; but this, while having no injurious effect on the Vine, is an advantage, and it is the first time I have known the fact to be referred to as an "obstacle." After the Vines have been pruned and, with the house, thoroughly washed with softsoapy water (at the rate of 4 ozs. to the gallon), the Vines are suspended horizontally over the front pipes from the trellis, and in this position, owing to the temporary check given to the flow of sap and the uniform amount of heat and moisture accorded to them, our Vines break regularly enough, the shoots at the top of the rods being as forward as those at the bottom. Furthermore, the staking which is generally placed over the front pipes for growing *Alternantheras* and other useful plants during certain periods of the Vines' growth without in any way interfering with the due development of the latter, when properly managed serve to diffuse the heat before it comes in contact with the foliage of the Vines.

I agree with Mr. Molyneux in saying that a pathway made of Portland cement is hard, durable, and easily cleaned; but I certainly do not agree with him in putting such a one in a vinery in preference to either the cast-iron grating or sleeper pathway referred to at page 24. Besides, when we come to make our borders and to plant the Vines in the houses in question later on (and in reference to which, as already stated, a paper will be written for this Journal) we shall require the space necessary for the formation of a cement pathway for a better purpose—viz., for soil in which to plant a set of Vines to furnish the hip roof, one to each rafter.—H. W. WARD, *Longford Castle*.

THOUGHTS ON CURRENT TOPICS.

A SOMEWHAT peremptory request for "some more thoughts" on the passing topics of the day, as recorded in the Journal, induces me to put on my "considering cap" and dwell momentarily on a few of the subjects in the last two issues. I cannot go further back because one of my neighbours has borrowed the others and not yet returned them. I have nearly made up my mind to lend no more books or papers, as they are so often absent when wanted through the temporary lapse of memory on the part of considerate people who "would not cause any inconvenience for the world."

OPENING the issue of the 22nd ult. at random, I rest on Mr. McIndoe's suggestive note on *Gros Guillaume* Grape. The crop, he mentions, is an unusually heavy one, representing about 5 lbs. weight of Grapes to each lineal foot of rod. But the significant point in his communication is embodied in the gentle rebuke he conveys against the habit that is too general of training Vine rods of the different varieties of Grapes at one uniform distance apart. If we think over the matter for a moment we cannot but admit that the rebuke is merited. There is no more justification for the practice of limiting the space for such Grapes as *Gros Guillaume*, *Gros Colman*, and *Gros Maroc* to that usually accorded to *Black Hamburgh* and *Muscat of Alexandria* than there is for planting *Enfield Market Cabbages* and *Drumhead Savoys* at the distances suitable for *Early Yorks* and *Little Pixies*.

THE strong-growing nature of the varieties mentioned should, I think, not be overlooked by amateurs or persons who only possess small vineries. They may possibly covet large Grapes, but will fail to produce them for many consecutive years on the crowding system, which is so prevalent when the luxuriant growers are included. Unless the Grapes in question have ample space for leaf-development the Vines will very soon refuse to bear on the spur system at all, and the varieties are then denounced as shy bearers, when at the same time their shyness is the result of an error on the part of the owner or cultivator. Half the failures in Grape culture, as in other things, are the outcome of one class of persons expecting too much, thus driving another class to attempt what is under the circumstances practically impossible of attainment. The true course, as it seems to me, is to first estimate the resources of a garden as accurately as possible, and then act accordingly.

GRAPES again! When will gardeners tire of writing and reading about the princely fruit? Probably not in the time of the youngest reader of these notes. It is not easy to say anything that has not been said before; still, even time-honoured advice often comes with wholesome freshness when its opportuneness is apparent. Of this nature was Mr. Abbey's reminder on page 60 that late Vines are often neglected at the roots, because when the fruit is cut the period is not considered suitable for the renewal of the borders. But as a more favourable opportunity cannot come by waiting why not act at once in the needed renovation? When the roots are in inside and outside borders the work as Mr. Abbey suggests is easy, and whenever confined to one border it is not very difficult to effect a needed improvement by an intelligent system of procedure on the lines indicated in the article referred to. Taking out old inert soil from Vine borders and adding fresh fertile loam can always be done by careful workmen without any ruthless disturbance of the roots; and for one fat fleshy feeding root now a hundred may readily be had in time for supporting the next year's crop of fruit. Let persons who have late Grapes "no better than they should be" think about this matter—think and act.

AND now we change the subject. The notes of a Dorset correspondent on *Mimulus* in pots carried me back in thought to the period of the

Indian mutiny, when I had the marginal stage of a conservatory a mass of flowers as bright a soldier's coat. The dazzling display was the result of a communication in the Journal recommending *Mimulus cupreus* for the purpose to which it was applied. Seed was sown in March and the plants grown very much in the manner recommended on page 65, but when strong the pots were stood in saucers of water in cold frames, with the result that from the end of May and for several weeks masses of crimson scarlet were produced, 18 inches in diameter, that quite surpassed in effect the larger spotted varieties of *Mimulus tigrinus*, and not one of many visitors knew the gorgeous old plant. Possibly there may be a few readers who do not know it now, but if they succeed in developing its full beauty they will, I think, never forget it as long as they live.

WE have been so accustomed to hear Lord Napier Nectarine extolled that Mr. Muir's condemnatory note was a little startling. So extremely successful has this variety been in winning prizes at great shows, that it came to be regarded as a standard variety for early use. Lord Napier is not quite a stranger to me, and I have had reason to speak approvingly both of the size and quality of the fruit, while the crops, without being crowded, were ample. It would appear, however, that it is not good everywhere, and Mr. D. Thomson's experience in the north suggests that it is not adapted alike for all seasons and districts. The tree is a strong grower, and too much root room with rich soil are possible errors to be avoided in its culture. A border 3 feet wide and half that in depth is ample, with surface mulchings in summer to support a large tree. Too much root-extension and too little calcareous matter in the soil are the chief contributory causes of splitting—at least that is my opinion, and well grown, Lord Napier is, as Mr. Thomson says, a "grand Nectarine." Perhaps Mr. Muir treated his trees too generously.

MR. INMAN, in his excellent Leeds Prize Essay on the Apricot on page 81, told us nearly everything that could be told in the limited space in which the subject was treated; but on one point, and that as perplexing as important, he is silent—namely the cause of the branches suddenly dying on the best of all varieties, the *Moorpark*. Can Mr. Inman further enlighten on this serious matter? If he can trace out the source of the evil and suggest a remedy I will vote that he be awarded another prize at the least equal in value to that generously provided by Mr. Oxley.

MOST readers of these notes are familiar with the beautiful terrestrial Orchid, *Cypripedium insigne Maulei*, but many of them have not yet had the pleasure of admiring the still more charming *C. Spicerianum*, which is "the most distinct *Cypripedium* ever introduced." That is the verdict on page 83, and I think it is just and true. But those who are familiar with both the forms named cannot fail to recognise them in the engraving of *Cypripedium Leeanum superbum*. I have not had the privilege of seeing this variety, but judging from the figure the combination of the characters of the two parents is most striking. We admire, and justly so, the works of artists in the life-like representations on canvas of various subjects, and honour the executants for their work; but does not the man who creates a flower like the one portrayed deserve equal honour? I think he does. The hybridisation of flowers is interesting and encouraging work, whether in the production of new forms to gratify, or the birth of others, such as fruit and vegetables, for daily use; and if I could by any means move the Royal Horticultural Society to take a step in advance it would be in the direction of according some mark of recognition to the originators of new products of merit in the vegetable kingdom. If a plant is worthy of a certificate I cannot help thinking the actual raiser of it is worthy of a certificate too. I may be wrong, of course, but nevertheless I claim to express my opinion on this matter.

MR. LAXTON'S success as a hybridiser and raiser of New Peas, Roses, &c., is admitted. He is perhaps the author of more new vegetables than any other person living or dead; and no one can peruse the record of his experience on page 87 in attempting to improve the Potato without being impressed with his patience and perseverance in a laudable object. Who but he would have thought of operating with the *Deadly Nightshade*? A "woody stem and tough foliage" are the coveted characters he desires to infuse into the Potato for rendering it less vulnerable to the attacks of the disease-inducing fungus. Will he succeed in obtaining these qualities? He may; and if he does will he preserve them? I doubt if he will. Every Potato, so far as I know, loses its "woodiness" of stem by the generous culture that is needed for securing good crops of tubers. Still, as the unexpected is always happening, we will hope a surprise may be in store in the direction indicated; but remembering how many hard-stemmed Potatoes have lost, or are losing, their "wood"—Patterson's *Victoria Red-skinned Flourball*, and even the *Scotch Champion*—I, for one, cannot be very sanguine that the skilful hybridist is within measurable distance of the great desideratum; yet I ardently wish him success.

A CORRESPONDENT, "J. L. B.," worthily recommends the culture of *Alpine Auriculas* for greenhouse decoration in spring. Of all dwarf plants they are perhaps the richest in colour, while no suspicion of gaudiness can be breathed against them. They are, moreover, so free that almost anyone having a frame may grow them, and it is a little surprising they are not more generally seen in gardens. Some of the Show varieties are also almost equally free, and quite as well adapted for the purpose in question—notably, the vigorous-growing *Col. Champneys*, and the beautiful self *Charles J. Perry*. These produce noble heads of charming

flowers, and ought to be grown in hundreds of gardens for decorative purposes; at least that is the opinion of—A THINKER.

WINTER DRESSING FRUIT TREES.

(Continued from page 86.)

PARASITES.—Apart from insect parasites there are some in the vegetable kingdom which depend for their existence upon plants of various kinds. No doubt there are predisposing causes to their attacks, but this is little understood. We know that unhealthy growth in trees renders them more susceptible to the attacks of insects and fungi, and we are equally aware of their presence on trees that are considered healthy, and that trees and plants under the most favoured conditions of soil, climate, and skilful treatment are liable to be attacked. Mildew may not cause much anxiety in the winter season, but we may safely anticipate a recurrence of the evil on trees that have been attacked by it in the past, as it will have left spores, if nothing else, behind, and to destroy those is quite as important as the developing fungus.

Perhaps the most fatal substance to fungi or vegetable life is sulphate of zinc, but, except in the hands of the scientific, it is best left alone. There is nothing unsafe in the old remedy—sulphur, and I consider it much better to use sulphur water than flowers of sulphur. It is readily made by putting 7 lbs. of sulphur vivum or black sulphur in an iron copper or pan containing 3 gallons of water, adding a piece of quicklime about the size of a man's fist, stir well up, and boil for fifteen minutes, then add 9 gallons of water and again boil for thirty minutes, keeping it stirred all the time. Allow it to cool, then take off the clear liquid and place it in bottles, keeping it corked for use. As a winter dressing apply it in a pure state, and after the foliage appears use it as a mixture of 1 pint to 3 gallons of water. To trees at rest it may be applied with a brush or be syringed; during growth it can be readily applied with the syringe. If, after the mixture has been boiling fifteen minutes, we add 2 lbs. of softsoap and 1 lb. of the strongest shag tobacco, the 9 gallons of water as before, and boil half an hour, allow it to cool and strain through a hair sieve, we have an admirable insecticide, which if placed in a stone bottle well corked will keep for years. The application should be 1 pint to 3 gallons of water at a temperature of 90° to 120°, syringed on freely.

MOSS AND LICHEN.—These are regarded as due to bad drainage, wet land, and moist climate. They are very injurious to the health and vigour of the trees, and should be destroyed. Old trees may have the trunk and the larger branches scraped, and this will remove many of the parasites, and they may then be brushed over with brine sufficiently strong to float an egg. The smaller branches should be dusted whilst they are wet with quicklime. Small trees are readily dusted with lime after rain, a coarse bag on a pole being a ready means of applying it, whilst a sulphur duster will answer for small trees, Gooseberry bushes, &c. The lime ought to be fresh slaked, and will destroy the moss and lichen, which will come off by degrees, leaving the bark smooth and clean, and the health of the trees will be improved accordingly.

BIRDS.—Where these abound it will be necessary to do one of two things—viz., kill the birds or make the buds obnoxious to them. Bullfinches feed almost exclusively on the young buds of trees in spring, and sparrows are in bad repute for a similar reason. The bullfinch is certainly very beautiful, but in a gardening point of view it has little practical value, and is not confined in its bud-eating propensities to Gooseberries, but it will also take the big buds of the Pear and Apple, together with Plum buds and the best of the fruit crop. About the orchard and fruit garden the bullfinch is not seen when insects are active; all it cares about is buds and the seeds of Raspberries. The green linnet takes some buds, but what of the sparrow? Well, I have found him the best and most confiding of friends. How many small caterpillars and aphides a pair of sparrows clear off our crops in a season! It is possible, no doubt, to have too many of them. I thought so last year when I found they paid particular attention to the buds of our Gooseberry bushes. They ate some of the buds, but they left them after the bushes were syringed with Fir tree oil, and the birds lived to devour myriads of insects. Where birds take the buds of fruit trees dress the trees with petroleum as soon as their attacks are observed—a wineglassful to 3 gallons of water, keeping it mixed as advised, and whilst keeping off birds it will act as a destroyer of insects.—G. ABBEY.

WHY ARE EARLY BULBS SO LATE THIS YEAR?—This question has been asked me, and I have asked myself, Where are our usually preco-

cious Snowdrops, single and double; Crocus in variety; Narcissi, double Roman, Paper White, Stella, Gloriosus, and the beautiful little dwarf N. minimus, which usually shows just now over the surface? With a warm southern sloping aspect, where the bulbs were matured early, I am quite unable to understand the matter. I am aware others, too, are surprised, especially considering the splendid ripening summer and autumn. Except some Empress or Crown Anemones the borders are still colourless, though I should have expected the reverse.—W. J. M., Clonmel.

CYCLOBOTHA ALBA.

THE plants formerly placed in the genus *Cyclobothra* are now by common consent merged in *Calochortus*, the present species taking the name originally conferred on it by Douglas, of *Calochortus albus*. Having put this fact on record it may, however, be more convenient to the readers of a popular journal like the present if the better-known name be retained in connection with the following description of this pretty and interesting hardy bulb.

The *Cyclobothra alba* is a bulbous plant growing about a foot high, with one radical leaf of considerable length (much longer than is represented in our figure), and from three to five shorter ones upon the stem, from each of which proceeds a lateral shoot bearing two flowers (sometimes, however, there is but one), with a pair of leaf-like bracts at the



Fig. 20.—*Cyclobothra alba*.

base of the peduncles. It is only strong bulbs which will produce the number of blossoms shown by our artist; usually there are but six upon the same stem. The flowers are drooping, of a globular form, and about 1½ to 2 inches in diameter. The three petals are extremely convex, and have their edges closely approximated, being rarely separated to a greater degree than shown in our figure. In colour they are of a silky white, with a tinge of green near the base; they are bearded on their inner surface with long white hairs, which, under the microscope, have a flattened ribband-like form. The three sepals are of a membranous texture, oval-pointed form, and of a pale green with a tinge of purple.

The curious nectariferous cavity which characterises this genus is well seen in the present species, appearing as a linear or oval depression in the petal, at a short distance from the base, and secreting a sweetish fluid.

The stamens are six in number, with the yellow anthers attached by their base to the filament, as in the Tulip. The ovarium is oblong, bluntly triangular, with intermediate furrows, and terminating by three short spreading stigmas. Seeds of an oval form, wingless, and of a purplish-brown colour. It flowers from midsummer to the middle or end of July.

The *Cyclobothra alba* is quite hardy, but the bulbs suffer from excessive wet; when planted in the open borders it should therefore be covered with a small handlight or empty pot during long-continued rains in autumn and winter. It does well in a mixture of peat and sandy loam, and should be planted in a warm well-drained border. If the bulbs are

removed from the ground after the foliage has withered they must be replanted not later than the end of October, as they usually commence their growth at an early period. It may also be grown in pots, and in this case may be protected in a frame during the winter months. Seeds are generally ripened, by which, as well as by offsets, it may be increased. The seeds are best sown as soon as ripe, but in that case the young plants must be kept in a frame through the winter. If the seed is preserved until spring, it will, however, vegetate without much trouble, aided by a little heat.

The genus *Calochortus*, as arranged by Mr. J. G. Baker in his Monograph on *Tulipeæ*, includes twenty-one species classed under four subgenera. The present species and the closely allied *C. pulchellus*, with yellow flowers, are the only two having globose drooping perianths, the rest having their flowers erect.—W. T.

FORCING CAULIFLOWERS IN POTS AND PLANTING OUT IN PITS AND FRAMES.

DURING the last five years I have been very successful with Cauliflowers both in pots and planted out. I have tried several sorts, but have come to the conclusion that none surpasses Veitch's Extra Early Forcing. For the earliest batch I sow a pinch of seed in a pan, employing light loamy soil with a little burnt earth to prevent the young plants "damping off," which they are very liable to do if neglected. They are placed on a shelf in an early vinery. The seedlings are soon in rough leaf, when they are very carefully lifted and potted singly in small 60's, using the same kind of soil. They are then returned to the same quarters until they have made a few roots, just enough to reach the side of the pot. They are next removed to a shelf in a cool house, from which frost is excluded by means of an old-fashioned flue. A fire is lighted by the man on duty at the least sign of sharp frost. At other times no fire heat is used, but every ray of sunshine is admitted, closing the house at 2 P.M., and if this be well charged with moisture on a bright spring day it is surprising how quickly these plants fill their pots with roots. When this has been accomplished they are transferred into larger pots, the best size being 24's. I have grown many magnificent Cauliflowers a little larger than cricket balls in 32's, but I prefer a larger pot, because it needs less attention in watering. The soil used this time is the same as recommended above, with a portion of well-decayed farmyard manure mixed with it, and a layer of the same placed over the drainage. In potting sufficient space is left to admit of a good mulching of manure just when the head is growing. Supplies of water are required several times on a warm day, and shading must be carefully attended to.

This is a most satisfactory way of supplying an employer's table with quickly grown and tender Cauliflowers at an early date. I have had them for the dinner parties during the London season, and they have been highly appreciated by those whom it is my duty and pleasure to serve. The pit or frame-grown plants are raised in the same way, but instead of being placed in large pots they are planted out in good soil in any pit or frame that can be spared. Sixteen inches apart is ample space for them to produce such heads if carefully shaded and watered.—G. MERRITT, *The Hoop Gardens, Welwyn.*

OWENS' PATENT SPRAY ENGINE.

MESSRS. S. OWENS & Co., the eminent hydraulic engineers and manufacturers of various kinds of garden pumps, have patented a new engine for distributing insecticides in the form of spray. This is beyond all question the most economical method, and at the same time effectual, for the liquid being so finely broken by a jet of air adheres to the foliage and insects like a film of dew—death dew it will doubtless prove to millions of pests in gardens, greenhouses, orchards, and Hop gardens.

As is stated in the prospectus, the chief object of the inventors has been to produce a machine capable of economically diffusing an insecticide in the form of a fine mist or spray, and to obviate the inconvenience and frequent delay caused by the use of a rose or jet of a common garden engine or syringe, in which the fine perforations constantly become choked by particles in the liquid. The action of the machine is as follows:—The liquid is forced from the cylinder by compressed air. The short india-rubber hose-pipe and copper branch-pipe have an inner and an outer tube, through which the air and liquid pass separately until they meet at the end of the jet and produce the spray or mist, and in this way a saving of 90 per cent. of the insecticide used is claimed over the ordinary method of applying it with the syringe or familiar garden engine. That is a great but probably not an exaggerated claim; and when it is remembered that one Kentish Hop and fruit grower expended a thousand pounds in soft-soap and quassia chips last year, the new economiser will presumably meet with general acceptance.

We have examined the engine, indeed worked it, and can find no fault with it. The spray is forced out of the nozzle like a volume of smoke, and it "sticks" to whatever it is directed. Any length of tubing can be applied, and with the aid of a rod of any required length prepared

for the purpose, a man can hold the nozzle close to the foliage of Vines and between the bunches of Grapes, or to the Roses on the roof of a conservatory, and doctor the thrips or red spider in one case and the aphides in the other without a drop of the solution falling on the plants below, but in such a case another man or boy would work the pump. For ordinary purposes, such as spraying Roses or fruit bushes, two persons are not necessary. The engines are made in various sizes, the small ones being handy and portable; for Hop gardens and orchards larger kinds are made to be drawn with a horse, these resembling a saddle boiler on wheels with a windlass at the end for working the pump.

Small hand vapourisers are much used for window plants and for dressing an individual specimen, but they are playthings in comparison with the invention under notice, which is manufactured as an article of substantial value and great commercial utility.



KITCHEN GARDEN.

SEEDS of all kinds must soon be sown. We make our chief list out in January, and then extras and specialities follow as we see them advertised. Old seeds kept from last year should not be relied on for important crops. If kept in a perfectly dry place and away from insects some of them may be good, but we never like to trust to them, and prefer new seeds. On the arrival of these they should be unpacked, examined, and then placed in a dry position. A box with a lid working on hinges is very convenient for holding seed packets, but where they are very numerous it is best to have a press containing a number of little drawers. A label should be put on the front of each indicating the contents, and as the seeds are taken out they should always be put in their proper drawers. We have often seen seed packets lying about in all corners of the potting shed and fruit room, but this is not economical or convenient.

Seed Potatoes.—The whole of the early and second early Potatoes should be taken in hand. Most of them are beginning to sprout now, and if this goes on too far it will prove very injurious. We like all our seed to be sprouted, but we do not like the shoots to be long, spindly, and white. These are bad; but the short robust green ones are capital, and must be secured. To do this the whole of the seed can be spread out in a thin layer, one seed deep, in a cool fully lighted place. The shelves of a fruit room are generally suitable. Where the tubers have been all heaped together and the sprouts have become long from growing through the mass the longest may be rubbed off, but it is a mistake to clean the whole of the growths from seed Potatoes at this time. The short ones should always be allowed to remain; sprouted tubers are always safe to plant, as no blanks follow.

Tomatoes.—Early fruits of these are always valuable. Cuttings rooted last autumn should be potted for fruiting; 10-inch and 12-inch pots are very suitable for them. Each plant will produce some dozens of fruits in pots of either size. We always grow our earliest Tomatoes in pots, as they are very convenient for placing in warm corners or on the back walls of vineries and Pine houses. In preparing the soil for them use it very rough, and do not put in any natural manure. 1 lb. of Thomson's Vine manure to 1 bushel of soil, or 2 lbs. of Beeson's bone manure to 1 bushel of soil, will produce more robust plants and a greater weight of fine fruits than any other manure which can be used. Pot young seedlings and sow more seed. As the plants advance in growth rub off all side shoots and confine them to one or two main stems. A light sunny position and the compost we have recommended above will always produce short-jointed fertile growths.

Jerusalem Artichokes.—These are amongst the most useful of all winter roots, and should be more extensively grown than we generally find them. Professional cooks know their value, but in small gardens they are too much neglected. They always produce a good crop, and are never diseased. Old plantations should all be lifted. Collect the roots, and select all the best to be put aside for use. The smaller tubers may be planted at once in good soil. They may be placed in rows 2 feet apart, and 1 foot from set to set. In summer the growths will grow up to 6 feet or more in height, and they may be planted in positions where screens are wanted. Nothing could be better for purposes of this kind.

Mint and Tarragon.—Where these are wanted early in spring in a green state lift roots of both now. Spread them out in shallow boxes with a little soil under and over them, and place them in a temperature of 65° or so. In a few weeks they will afford many gatherings.

Frames.—Continue to make up hotbeds and cover them with frames, in which sow Carrots, Radishes, and plant Potatoes. In frames where these are coming through the soil or are advanced in growth admit air on all fine days. Cover the glass every night with mats, and increase this when it is frosty, but do not allow the coverings to remain on during day unless it is very cold, as darkness encourages a tender growth. Cauliflower plants which have been wintered in frames or under handlights should have plenty of air, so should young Lettuces and any other young vegetables intended for planting out.

Box Edgings.—These exist in many kitchen gardens, and where they have grown out of all their original dimensions they should be taken up,

the plants divided, and replanted. Little pieces with roots and tops about 3 inches high are very suitable for a new edging.

FRUIT FORCING.

PEACHES AND NECTARINES.—Earliest Houses.—If any of the trees are still in flower the ventilators must be kept sufficiently open to admit a circulation of air, but not to cause a draught, and continue to assist the fertilisation until the setting is completed, when syringing once or twice a day with water slightly warmer than the house will be necessary for cleansing the trees of the remains of the blossoms and for keeping insects in check. On dull days syringing will not be necessary, but a proper amount of atmospheric moisture must be maintained by damping occasionally. Exhausted fermenting materials may, after the fruit is set, be removed from inside borders, and if these need water take advantage of a fine morning to give a thorough supply, which will be sufficient for young trees, but old trees showing signs of weakness should have weak tepid liquid manure. The young shoots will be growing fast under generous treatment, due attention being given to early ventilation and early closing to insure a thoroughly solidified and short-jointed growth, attention being needed daily in disbudding. By commencing at the extremities of the trees and taking the foreright shoots off first, a check to the sap will be avoided, and the weakest and least forward parts will gain strength, which may be increased by pinching out some of the points of the side shoots on the strongest and extending branches at subsequent disbuddings. Those closely stopped shoots form spurs that usually ripen and show plenty of flowers, which set well the following season. This method, however, is only applicable to the extending shoots or branches, as it is necessary to lay in a shoot from the base of the current bearing shoots in other parts of the tree, and to retain a shoot on a level with or above the fruit to attract the sap to the fruit, this shoot being stopped at the second or third joint, and kept regularly pinched to a joint or two of subsequent growth throughout the season. Unless the set is very thick defer thinning the fruit until it is seen by the swelling of the fruit which has been properly fertilised, when the fruit should be thinned by degrees until few more than one to every square foot of trellis covered by the trees remains for the crop. A few more Nectarines may be left than Peaches, but if fine fruits are wanted they must be left in similar numbers.

Second Early House.—The buds are swelling satisfactorily, giving promise of abundant fine flowers. Where crowded they should be thinned on the under side of the shoots by drawing the hand downwards. If there are any aphides fumigate before the blossoms open, and cease syringing directly the anthers show clear of the petals. Maintain moderate moisture in the house by damping the paths, borders, &c., in the morning and afternoon of fine days. Admit air early in the day and close early, and ventilate a little at the top of the house constantly to promote a circulation of air. Let the inside borders be well supplied with tepid water, and lightly mulch the surface with short stable litter, which will help the surface roots. The night temperature may range from 45° to 50°, 5° more by day artificially, and 10° to 15° rise from sun heat, and a free circulation of air, especially in the early part of the day. When the blossoms are expanded increase the night temperature to 50°, falling to 45° on cold nights, whilst in mild weather 5° more will be safe. Provide 55° by day artificially, at which ventilate a little, increasing it with the sun heat to 65°, and reduce ventilation with the declining sun so as to keep up the temperature to 65°, at which close the house for the day.

Fruit to Ripen in July.—Where there are several houses a third may now be started, the fruit on which from the ordinary kinds of Peaches and Nectarines will be ripe in July and onwards. The inside borders should be well watered with tepid water, repeating if there is any doubt of the soil being dry, as it is essential to strong flowering that the soil be thoroughly moist. Syringe the house and trees twice a day, the second time sufficiently early in the afternoon to allow of the trees becoming fairly dry before night. Turn the heat on early in the morning to raise the temperature to 50°, and allow an advance of 10° to 15° from sun heat, accompanied by free ventilation. Close at 55°, and allow it to fall through the night to 40° if cold or 45° if mild.

Succession and Late Houses.—The trees are swelling the buds fast in houses that usually are relied on to give ripe fruit in August. They should be kept as cool as possible by ventilation on all occasions except during frost, which is best excluded. When the blossoms show colour nothing is gained by seeking to retard them; indeed by starving them they are often made so puny as to set very badly, hence they should be kept cool until this stage is reached, and then have treatment that will insure the perfect development of the blossoms. They can readily be kept from ripening the fruit too early by free ventilation in the early stages of swelling, and such is not only better for the crop but the continued health of the trees. See that the inside borders are in a thoroughly moist condition.

CUCUMBERS.—Young Plants.—These will now be ready to plant in the Cucumber house. Press the soil firmly around each plant, place a stick to each and secure to the first wire of the trellis. Should there be bright sunshine at the time of planting shade lightly from about eleven to one o'clock for a few days to prevent flagging, but after they become established the shading must be discontinued. See that the linings of dung frames are properly attended to weekly or fortnightly according to the weather; and to meet the demand for materials for this purpose and making fresh beds keep a good supply of well-mixed dung and leaves in the reserve yard.

Bearing Plants.—Maintain a night temperature of 65° to 70° on mild nights; on cold it may fall to 60° in the morning, 70° to 75° by day, and 80° to 90° with sun heat. Ventilate a little at 75° and increase it with the solar heat, closing early in the afternoon, with plenty of atmospheric moisture on bright sunny days. Keep the evaporation troughs charged with liquid manure, and afford tepid liquid manure to the roots, but only when moisture is required. Crop lightly, remove exhausted growths and encourage young in its place, and so keep up a succession of fruitful growths.

PLANT HOUSES.

Azaleas.—Where these plants are forced early in the season they must not be returned to the greenhouse when they are past their best. This is done in many instances, and the result is serious injury to the plants, and frequently they do not recover again during the whole season. They



Fig. 21.—Owen's Patent Spray Engine. (See page 116.)

should be accorded a position where a little heat can be maintained—say 45° to 50° at night, with a rise of at least 5° by day until the season has advanced. If the atmosphere is kept close and the plants syringed twice daily they will start gradually into growth. It is utterly impossible to have plants in good condition for early forcing next autumn unless they are assisted at this season of the year to make an early growth, which will be ripened early, and leave ample time for the plants to enjoy a good season of repose, which is essential to the health of these plants. To flower plants months before their usual time cannot be accomplished unless the plants are trained for the purpose, and this can be done by assistance now, and thus render autumn forcing easy when the days are short and sunless. When the wood is cut with the flowers to any extent the plants flower very irregularly afterwards, whether forced early in the season or not. The uncut shoots start and complete their growth much earlier in the season than those that have been cut. It is a very good plan when the wood is cut to any extent to entirely cut over the head of the plant, and thus compel them to start evenly into growth. It is only by this means that an even head of bloom can be produced. Azaleas will bear this treatment without the slightest injury, and will break again freely in the temperature indicated.

Epaeis.—Where the flowers of these plants are used as much for cutting as for the decoration of the conservatory, the earliest batch will be ready for pruning. No advantage is gained by leaving one or two

inches of the past season's wood; on the contrary, the closer they are cut the stronger they break into growth. If the plants contain a large number of small growths they should be thinned out liberally, so that the strength of the plants can be concentrated. A few well-developed shoots that will flower from 1 foot to 18 inches of their length is always more useful and effective than double the quantity of small weaker shoots. After cutting back these plants should be grown in a similar temperature to that in which they stood while in flower. Any light position in a structure that can be kept somewhat close where the temperature does not fall below 45° at night will do for them until they have well started into growth. After they have once started into growth the sooner they are carefully and gradually hardened to cool treatment the better. When confined in a close atmosphere too long they grow weakly and soon exhaust themselves, for the least possible check afterwards will frequently stop their growth.

Daphne indica.—These beautiful fragrant flowering plants are frequently injured by undue forcing to bring them into flower. They dislike heat or a close confined atmosphere, and yet they are too often subjected to such treatment, which they resent by turning a sickly yellow, losing their foliage, and eventually dying. Forcing may be done, however, without injury to the plants provided fire heat is not employed and the plants are only subjected to a close atmosphere for two or three weeks to hasten the development of their flowers, they being again gradually hardened to cool treatment. The best and healthiest plants of *Daphne* we have ever seen were never forced but allowed to flower naturally and wintered in cold frames, the pots being plunged to protect their roots from frost, no other protection being given.

THE BEE-KEEPER.

SEASONABLE NOTES ON BEES.

THE first month of another year has quickly passed away, and although the time is yet some long way ahead when the bees will call us into activity among the hives, yet now is the season for preparation. Let all bee-keepers take time by the forelock, and when the flowers appear and the merry workers begin their new year's harvest let not their owners be found with their share of work in arrears. With the bees themselves all should still be rest, undisturbed quiet. With the lengthening days the sun will soon so warm the atmosphere when west winds blow that bees will most frequently take an airing, and more food will be consumed. It is well, therefore, that it be known for certain that plenty of food is within easy reach of the cluster. Should any hives have gone into winter quarters with an insufficient supply of stores, the bee-keeper may now seize the first opportunity to supply the want. This should be done with the greatest care and caution. The quilts should be only lifted to such an extent as to render it possible to place a cake of candied sugar on the top of the frames over the ball of bees. We do not recommend disturbing the frames and passing the food between them or among the bees. This might lead to much mischief by causing the mass of bees to separate. Except for feeding in such a case of necessity no examination of stocks should yet be made. When February is drawing to a close then more earnest work will commence. We have given the recipe for the candy in a former number of the Journal. It is well to add to the sugar some of the salicylic acid solution.

More than at any other time of year there is now danger of dysenteric symptoms among bees. We have had a long spell of such weather as prevents bees leaving their hives, and yet the frost here in the south of England has not been of such vigour as to keep them perfectly quiet. During such weather stores are consumed and a certain amount of activity continues in the hive, whereas the bees do not get abroad for natural purposes of relief, and this often leads to an attack of dysentery. If hives are kept warm, and, what is even of greater importance, thoroughly dry and ventilated, there will be little to fear from a lengthened imprisonment. But where all means of ventilation are wanting, either through covering the frames with crown-boards or some surface impervious to the air, from allowing the floor-boards to become saturated, the mouth of the hive blocked by dead bees; or, as we have traced one severe case, through the owner placing his bees in a thorough draught—were all or any of these errors or omissions prevail there dysentery may assume a virulent form. We particularly speak of this disease in this letter because we have had two cases lately under our observation. One could only be traced to the fact that the bees stood in a shed between an open doorway and an open flap, by which access to the hive was given. Whatever wind blew it caused a draught sufficient to turn a small windmill. The bees were in a dry skep well filled with comb. They were not clustering on cold slaps of honey, but on dry partly empty combs. They were sufficiently powerful to have kept up a good temperature, and they

had sufficient sealed food. There was nothing to answer for the attack of dysentery, which was getting very bad, except the current of air in which they constantly stood. The other case was at once accounted for. Bees driven very late in the autumn, and fed rapidly on thin syrup, had clustered on cells full of uncapped food. The evaporation from this and its subsequent condensation had subjected them to a constant shower bath, and doubtless the food has also been becoming more and more unwholesome through fermentation. In such a case a severe attack of dysentery was not to be wondered at, but rather expected. In the first case part of the cure consisted in the prevention of the draught. The doorway was boarded up, and both hives await other measures, which we promise to carry out on the first day favourable to our operations.

There may be readers who have hives, or whose neighbours have hives in a similar plight, and we will therefore say what we intend doing to arrest the disease. With the skep we shall proceed as follows. When the sun and a good rise in the thermometer tempt the bees out for a flight we shall prepare some warm syrup with a dose of the acid solution. Having reversed the hive this will be sprinkled over bees and comb, and a small quantity fed from the roof after the hive is replaced on its floor-board. Of course the latter will be scrupulously cleaned, or, what is better, a fresh one put in its stead. This will be repeated the next fine day, and, as in other instances, we shall hope to see the hive soon return to its normal condition of health. The other case is in a bar-frame hive. With this we shall act differently. The cluster must be disturbed and sprinkled with the medicated food as above, but we shall take out all combs with unsealed food, and contract the bees on to clean dry slabs, with empty cells to cluster on. If sufficient combs are not at hand we shall pass the frames through the extractor; and if there be not sufficient sealed food we shall give a slab of candy over the cluster, making all warm and snug after, and contracting the entrance after cleansing the floor-board.

Bee-keepers should not allow the season for planting to pass by without availing themselves of the opportunity to put in tit-bits for their favourites. We have on other occasions called attention to those plants and shrubs, which are best to plant for bees. We do not say that it is possible to add materially to the season's honey harvest by putting the few favourite flowers in one's garden or near one's apiary. In order to make the year's produce appreciably greater we should have to sow and plant by the rood or acre. It is, however, very pleasant to see our little workers revelling on the flowers of such plants as *Limnanthes Douglasii*, or to watch them darting out between the showers of early springtime, and sipping here and there, so daintily, so methodically, from the pendent little bells of the Gooseberry. We have the great pleasure of knowing that, although the pilferings will all be eaten up by the hungry brood, yet our crop of fruit is being guaranteed, and that should the smiles of April be like angel's visits, few and far between, we may nevertheless already see the laden boughs, red and white and yellow Gooseberries glistening in July's heat. And how about those monster luscious Strawberries that the neighbours are always talking about? Although we take to ourselves some of the trouble, and therefore do not deny ourselves a modicum of the praise, yet to our little winged fairies do we owe more; for in a catchy blossoming time do we not see much fruit red and ripe on one side and green and hard and shrivelled on the other, when we hunt for it in plantations where few bees revel, while in the neighbourhood of the hives the ceaselessly busy fertilisers improve each shining hour? Then let everyone plant for his bees, and bees and planter will profit. We grow many varieties for our bees, but they seem to revel on none so much as on the *Limnanthes*, and it will grow anywhere—in the richest soil or on the pathway. Once planted it will yield its hundreds of self-sown seedlings every season. Wallflowers, *Myosotis*, Thyme, Veronica, Ribes, London Pride, *Arabis alba*, French Honeysuckle, Crocuses, and Willows are among the best of honey and pollen-yielding plants to surround an apiary, while scarlet and white climbing Beans always secure attention and yield accordingly, and bush fruit returns good measure pressed down running over. Solanums raised in a greenhouse, and kept there or in frames, yielded few berries. Last season we stood a batch of plants, plunged in a bed of cocoa-fibre refuse, just in front of the bee shed. The result was such a mass of lovely orange berries all through the dark winter months as are rarely seen—boughs weighed down with fruit.—P. H. P.

THE BRITISH HONEY COMPANY.

"A HALLAMSHIRE BEE-KEEPER," on page 99, inquires "What has the British Bee-keepers' Association done to help the honey producers? The Lincolnshire Association annually holds a fair for the disposal of members' honey, which has always been a success; but the British Bee-keepers' Association has never followed the example and started one in London or elsewhere." Before "A Hallamshire Bee-keeper" made such an assertion as this he should have ascertained the facts. Had he taken

any trouble to learn the truth he would have found that his statement is as incorrect as it well could be. The British Bee-keepers' Association for many years has done everything in its power to promote the sale of honey. At its numerous exhibitions and shows there has uniformly been a honey fair, or some special department for the sale of honey. It has urged its members to make the honey they have obtained as attractive as possible by placing it in proper bottles, with labels that would please the eye as much as the honey would gratify the taste. For two years it maintained a honey depôt, to which members were entitled to send their honey for sale. This department, it is true, proved a failure for reasons which need not be specified here; still the attempt was made. The numerous affiliated Associations following the example of the parent Association make the sale of honey an important feature of all their shows, and the sale of honey, as well as its collection by the busy bee, have been developed to an enormous extent during the last few years directly through the influence and exertions of the British Bee-keepers' Association. Does the "Hallamshire Bee-keeper" know that during the Health Exhibition honey in large quantities was always on sale at the department established there at great cost by the British Bee-keepers' Association, and that the sales for weeks amounted to sums exceeding £20, and sometimes approached £30 per week?

It is perfectly true that there has been a feeling among some of the members that more might be done to promote the sale of honey. Personally I object to the Association buying and selling honey. This does not seem to me to be its business. Trade is altogether outside its province. The British Honey Company, therefore, has been started to meet the want and provide the means of bringing the producer and purchaser together, or at all events of selling the honey of which some persons find it so difficult to dispose. The Rev. Herbert R. Peel, to whom "Hallamshire Bee-keeper" evidently alludes as a promoter of the Company, finding that great objections were entertained to the Bee-keepers' Association taking up the honey trade has, after great exertions, started the British Honey Company, and in so doing has done a public service. The only object he has in view is the public good.

Having no shares in this Company, nor intending to take any, I can speak more freely, so that I can touch without hesitation on a point mentioned by "A Hallamshire Bee-keeper," which at the first blush may look a little suspicious. The Honey Company has taken power to deal in foreign as well as British honey. Their primary object is to promote the sale of British honey and to find the capital without which no business can be carried on. But sometimes the honey harvest in England altogether fails. If, then, there is no honey to be had in England, the Company must seek its supplies elsewhere. Is not this course one which should commend itself even to "A Hallamshire Bee-keeper?" Even if he does not approve of the absence of any restriction I am certain that those who invest their money in the hope of earning a dividend will do so.

In a sentence of sixteen lines without beginning, middle, or end "A Hallamshire Bee-keeper" complains that the British Bee-keepers' Association has adopted an improper standard for 2 lb. sections without any authority from its members. If "A Hallamshire Bee-keeper" will take the trouble to look at the last number of the *British Bee Journal* he will see that no such standard has been absolutely adopted, that the Committee are divided on the subject, and that the question of the exact form of the standard section is to come before the members at the next annual meeting on February 11th.—A. B. M.

IN your impression of the 29th of January there is a letter from "A Hallamshire Bee-keeper," which seems to insinuate that the formation of the British Honey Company is a danger to apiculture. As one of the directors of that company I ask your indulgence to place before your readers another view of the case.

When the articles of association were being drawn up our solicitor strongly advised us to take full powers to deal in everything appertaining to bee-keeping—in fact, the Company was to be as general as the celebrated curse in the "Ingoldsby Legends," so that we should not have anything left out, but with the difference that, instead of "one penny the worse," our shareholders might be "pounds to the better." Moreover, we had to take into consideration the probability of a bad honey harvest. If we cannot get English honey we shall have to supply our customers with foreign honey, as it would be extremely unbusinesslike to stop operations just because of a bad season in England.

Whatever honey we sell the public may be assured that, so far as we are able, we will guarantee the purity, nor shall we attempt to sell foreign honey as English honey.

I have been a bee-keeper for nearly twenty years, and served on the Committee of the B.B.K.A. at its commencement. Its minutes will show that either in 1874 or 1875 I strongly advised the Association to make the *Bee Journal* their organ, and brought forward a motion to that effect, but the jealousy existing between certain bee-keepers at that time, and which I regret to say is still smouldering, prevented my motion being carried, as also a motion for establishing a honey depôt. But, though the waiting has been long, hope never died, and now at last both my wishes have been fulfilled; but I trust that the foolish friction which delayed the launch of these my pet projects will not wreck the vessel at the commencement of her voyage.

Your correspondent is utterly wrong with regard to the adoption of the sizes of the standard sections, as he will see from the current number of the *Bee Journal* that the adoption of the report of the sub-Committee has been referred to the general meeting on February 11th.

If the Committee do not represent the true wishes of the bee-keepers at

large, whatever they propose against these wishes will fail in their effect.

The insinuations that we, directors of this Honey Company, have banded ourselves to palm off American honey as English, either evince great ignorance or worse; and then, not content with this accusation, he further suggests that we intend selling honeydew to reduce the demand for real English honey! I confess I cannot follow him in his reasoning, though perhaps another word would be more appropriate. In conclusion, he suggests that the B.B.K.A. has only benefited the hive-makers and not bee-keepers. Very charitable praise for its ten years' work!—G. WALKER, JUN., L.R.C.P., *Wimbledon*.

NOTES ON BEES.

SINCE the 10th of January when our bees had a partial airing we have had a fortnight of frost, but the temperature has never been below 15° throughout the whole season. On the 24th of January the frost gave way, and on the 26th of January it was mild, the temperature at midday standing at 45°. The bees are taking the advantage of the mildness and are having a thorough airing. With the exception of the Carniolians they seem more quiet during winter, and at the breaking-up of a swarm are not so liable to lose themselves as other varieties. This has been my experience with them since their introduction, and if this remains a fixed principle it will prove a good property. A bee or hive of bees that tides over our rigorous and protracted winters is that which best repays the bee-keeper. A sufficiency of stores are a means to this end. I have a Carniolian hive that I have been paying special attention to during this winter; it is one of which the bees have not flown yet, and was I to believe what some say, that if bees are observed to be clustering at the top of the hive it is a sign they are in imminent want and should be fed. This is what they are doing and have done all winter, while they are not only in excellent health but have abundance of food to tide over till summer. I mention this case specially, so that it may be a warning to those who may read the advice alluded to, which might induce them to interfere unnecessarily with their bees at this season. The less bees are disturbed at any time, particularly during summer, the more satisfaction will the apiarian derive from them during summer. I kept a compound feeder on this hive all winter, the movements of the bees being observed at all times through the glass.

From the protracted season through frost spring flowers are some weeks later than the average of years. If the weather keeps mild the bees will be on the outlook for water and pollen, although I prefer they should not be incited to breed much until the end of February. Still in order to keep them at home and prevent them from gathering extraneous material, and robbing or frequenting places where they are liable to be lost or killed, I will supply them with both pea meal and water; the former I put in a zinc cylinder with one opening turning to the lee side by a vane. When bees are inclined to go abroad in search of pollen before the flowers are in bloom they gather as a substitute for pollen sawdust, dust from decayed wood, and similar matter that is of a powdery nature. After the bees are thoroughly aired they will bear to be shut in for a considerable time without injury should circumstances demand it, provided they are well ventilated.

BEEs IN THE DARK.

The bee hive is full of wonders, but of all there is perhaps nothing that surprises and impresses the majority of people so much at first sight as the comb filled either with honey, brood, or pollen. Yet all these are elaborated in the dark, because we have no proof that bees see in the dark, and everything we observe of them outside the hive confirms our opinion that they do not see. Bees in the dark seldom fly but creep and run about in a bewildered manner, but if within hearing of their hive they will find their way to it. Bees may have the power of vision in the dark, but should this be the case it but adds to their wonders. Whether it is sight or some other sense in the bee that causes it to swerve or overreach its hive when any obstacle is placed either in the rear or at either side of it I cannot say; but if the latter, then that gives us an idea how bees perform their work. Their accuracy may depend upon the bees' being able to measure distances from the approximation of any objects, or, in other words, having the power of feeling without touching, thereby enabling them to preserve the proper distance in all their work. I have observed both with man and animals that were blind, when any obstacle was placed near the point they aimed at, they invariably deviated to one side; this was of course in places they were accustomed to. If I am correct in these surmises it readily explains the reason why bees do not collide with objects in their flight nor with one another when swarming. But wonderful as their eyes are, equally so are their other senses that enable them to discover anything, such as their hive or honey, even when removed far out of their sight, or strange bees though they are peaceably inclined.—A LANARKSHIRE BEE KEEPER.

TRADE CATALOGUES RECEIVED.

Vilmorin, Andrieux, & Cie, 4, Quai de la Mégisserie, Paris.—*Catalogue of Seeds, of Trees and Shrubs.*

James Backhouse & Son, York.—*Catalogue of Alpine Plants, Hardy Perennials, and Florists' Flowers.*

George White, Carriagehill House, Paisley.—*Catalogue of Florists' Flowers.*

E. J. Jarman, Chard, Somersetshire.—*Catalogue of Seeds for the Kitchen and Flower Garden, 1885.*

T. Cross, Bury St. Edmunds.—*List of Vegetable and Flower Seeds.*



TO CORRESPONDENTS

* * * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Books (A. G. H.).—The price of Wright's "Mushrooms for the Million," is 1s., post free 1s. 2d., from this office. Taylor's "Vines at Longleat" is out of print—at least, we have no copies in stock. (G. E. S.).—The "most complete" work on Vines is Barron's "Vines and Vine Culture," post free 10s. 6d. The "most compact" work on general gardening is the "Garden Manual," post free 1s. 9d. (G. H. Conrick).—There is no work specially devoted to late Grapes, but their culture and methods of keeping are described in Mr. Barron's work referred to above. It is the latest and most comprehensive on the subject of Vine culture. We doubt if there is such a work on Pigeons as you particularly require, but Cassell's "Practical Pigeon-keeper" contains much information. We can obtain and send it to you by post for 4s. We can also procure and send Neighbour's "Apiary" in return for 5s. 6d.; but we cannot tell you the best kind of hive for bees any more than we can describe the best house for bee-keepers to live in. Everything depends on the object of the apiarian and his skill in management. The book referred to gives illustrations and other particulars of different kinds of hives. If you desire to send the amounts for any of the books, and will also write your name and address very plainly, your letter will be attended to by the publisher.

Tillandsia Lindeniana (C. M. M.).—The figure to which you refer appears on page 359, vol. xviii., new series, the issue of May 19th, 1870.

Alpine Plants (N. G.).—In reply to your question we can only say that the "newest catalogue" we have received, and an excellent one it is, is from Messrs. James Backhouse & Son, York.

Plants for the Floral Committee (J. H. F.).—The proper step to take in having plants submitted to the Floral Committee of the Royal Horticultural Society is to write to Mr. Barron, Royal Horticultural Gardens, Chiswick, London, who will advise you on the matter.

Liquid Manure (A. T., Liverpool).—In all probability the manure to which you refer will be excellent for Roses. Some of the ammonia will have escaped, but other and very valuable constituents will remain, such as phosphate of lime, sulphate of potash, and carbonate of potash. If you mix in some bleaching powder (chloride of lime) there will be little offensive smell, while gypsum with a little oil of vitriol poured in will add to the utility of the urine as a manure.

Scale on Peach Trees (J. B.).—Your trees are infested with the woolly scale insect, which may be destroyed by a mixture of softsoap and petroleum, scrubbing it well into the cavities of the bark with a brush. Dissolve 4 or 5 ozs. of softsoap in a gallon of hot water, and while still hot stir briskly in a wineglassful of petroleum, and continue agitating when applying to the stems only, not the buds, at a temperature of 130°. If the brush is used vigorously for removing the woolly covering of the insects not many of them will recover from the effect of the solution.

Weekly Work (E. D'O.).—We are obliged by your suggestion, which shall have our consideration; but it must be remembered that no code can be framed that will be of equal value in all districts. No one ought to know how to proceed with routine work in a given locality and garden so well as a resident gardener, and gardeners as a rule do not attach nearly the same value to general calendrical instructions as amateurs do, who are sometimes misled by them. We shall be glad if you will forward us your gardener's opinion on this matter.

Yew Trees and Cattle (B.).—It is not easy to advise you in a case of this kind. There is, we think, little doubt that the partially dried Yews are more poisonous to cattle than fresh growths are. For years we have known a park in which large Yew trees are established, and no injury has ever resulted to animals grazing in their vicinity. The trees are standards, and the growth more or less beyond the reach of cattle, but not absolutely so, and they have very possibly been occasionally nibbled. The safe course is to trim off the lower branches and form round-headed standard trees. In "Hogg's Vegetable Kingdom" it is stated "The leaves of the Yew are decidedly poisonous both to man and to horses and cows. They have been administered medicinally, and exhibit the same action on the system as Digitalis. The fruit is perfectly harmless and even agreeable to eat, but the seeds are acrid and narcotic."

Worms on Lawns (A. M. B.).—There is no simpler remedy for expelling worms from lawns and borders than clear lime water. Get some

lumps of lime fresh from the kiln and place them in water, stirring well, then allowing the lime to settle and the water become clear. If there is any sediment at the bottom of the vessel the water will be as strong as you can make it and perfectly safe. About a pound of lime will suffice for ten gallons of water. It is best to apply it during mild showery weather, when the worms are near the surface. If there is no sediment at the bottom of the vessel the lime water will not be strong enough. An ounce of corrosive sublimate dissolved in a little boiling water, then mixed with forty gallons of clear water and applied through a rose, has also been found to expel worms from lawns.

Herbaceous Flowers (B. G.).—We should think that annuals are not intended to be shown in the class you name, and it is probably meant to be confined to herbaceous perennials—that is, plants which die down to the roots every winter. You will find a suitable list on page 100 last issue of this Journal, excluding the last four named there. You must grow more than a dozen, or it is doubtful you will be able to cut the requisite number at the desired time. Skill in bouquet or buttonhole making can only be gained by practice and care. The chief art is employing every flower to the best advantage, and does not depend upon a great variety of materials. They should be placed together lightly, but not loosely, and crowding should be especially avoided. A few simple flowers gracefully arranged are far more effective than the choicest bunched together without due consideration.

Cape Bulbs (Hereford Subscriber).—It is not very easy to determine the names of small dried bulbs. Those you have sent have been carefully examined, and the following names are possibly not very far wrong:—1, 6, 7, *Ixias*; 2, *Freesia*; 3, *Ornithogalum*; 4, *Gladiolus*; 5, *Babiana*; 8, *Watsonia*. They will all grow in light turfy loam, in which a fourth part of peat may be intermixed if readily obtainable, and a sprinkling of sand. They had better be placed in small pots and stood in a greenhouse, being careful not to overwater. It will be an advantage if the pots can be plunged in damp ashes, leaf soil, or cocoa-nut fibre refuse, as sufficient moisture will pass through the pots until the bulbs commence rooting. They will do in a frame plunged and the tops of the pots covered 1 inch deep. The soil must be damp when used, but not distinctly wet. When the plants are growing they need abundance of light in a frame or greenhouse, with water to keep the soil uniformly moist.

Strawberries and Millipedes (M. D.).—The fruit is undoubtedly attacked when ripening or ripe by the snake millipedes (*Julus*), the species usually found in the fruit of the Strawberry being *Julus pulchellus*, but sometimes *Julus terrestris*. The pests are generally considered to subsist on decaying vegetable matter, but we have found them very active in attacking fruit and Potato tubers, even where there was no decay; yet they are most prevalent where decaying vegetable matter exists, and we have no doubt but that they are fostered by it. The pests are deterred by a dressing in the spring of quicklime, soot, and wood ashes, which must all be dry, and mixed in equal proportions, applying evenly over the whole of the surface at the rate of half a peck per rod (30½ square yards). It will not injure the plants in the least, but, on the contrary, is a good fertiliser. The best agent in driving the pests away, if, indeed, it does not destroy them, is to apply gas lime at the rate of half a peck per rod, mixing it with an equal quantity of dry earth, so that in the mixed state a peck will be applied per rod. It may remain on the surface or be lightly forked into the soil, and should be applied in March. It is also a capital plan to cut some Potatoes in halves and place them with the cut parts on the soil around the plants, and examine them every morning, when the pests will be found feeding on the Potatoes and can be readily destroyed. The baits should be used about ten days or a fortnight before and during the ripening of the Strawberries. They are also readily trapped by placing a boiled Potato in a little hay loosely, and setting them beneath the foliage of the Strawberry plants. They will enter the hay and feed on the boiled Potato, and being frequently examined, vast numbers may be quickly disposed of.

Madresfield Court Grape (A Reader).—This Grape is rather prone to crack, and no "prescription" can be given to prevent the evil in all cases, as more depends on the general management that is accorded throughout than on any particular method that can be adopted at a particular season. The reason why the Madresfield Court Grape is more liable to crack than many others is because of the comparative inelasticity of the skin, and it is rendered still more brittle and unyielding to pressure from within by injudicious ventilation. Any check to the free swelling of the berries when young by an atmosphere alternately moist and dry, or by a sudden inrush of cold dry air, or by not opening the ventilators soon enough in the morning, then throwing them open too widely at once, causing sudden and extreme evaporation from the fruit—any one or all these mistakes affect injuriously the cuticle of Grapes (but the results are more apparent in the variety in question than in most others), and predisposing them to cracking. Then, again, an excess of water at the roots on the approach of the ripening period, and especially if the soil has been previously rather dry, causes such an influx of sap that the berries cannot resist the pressure. The roots of this Grape should be under command, and the water supply also; but even then if sound judgment be not exercised in management the fruit will crack. This Vine should be allowed to carry as much foliage as can be fully exposed to the light, so as to appropriate the sap, and there must be no ruthless removal of long sub-laterals that may have been allowed to extend unduly on the eve of the ripening process. This is yet a too common practice. Cutting a notch in the laterals just below the bunches has been found by some cultivators to arrest a too free flow of sap to the berries, and others have effected the same object by twisting a piece of wire tightly round them; but many skilled cultivators produce splendid examples of this splendid Grape without having recourse to such manipulation. As soon as the first sign of mouldiness is seen the berry should be removed, or it will quickly impart the affection to others.

Plants for Borders (Inquirer).—The following are among the plants likely to succeed and produce flowers from early spring till late autumn. Your borders will accommodate plants of moderate height, the back row being the tallest. For these we recommend *Achillea Ptarmica*, fl. pl., *Alstroemeria aurea*, *A. peregrina*, *Anemone japonica alba*, *Aquilegia chrysantha*, *Asclepias tuberosa*, *Bupthalmum salicifolium*, *Campanula macrantha*, *Catananche bicolor*, *Coreopsis lanceolata*, *Dielytra spectabilis*, *Erigeron speciosus superbum*, *Eryngium amethystinum*, *Gaillardia grandiflora*.

flora, *Geum coccineum plenum*, *Gillenia trifoliata*, *Gypsophila paniculata*, *Helianthus angustifolius*, *Leucanthemum maximum*, *Lychnis chalconica fl. pl.*, *Oenothera Youngi*, *Pentstemon barbatus Torreyi*, *Rudbeckia Newmani*, *Scabiosa caucasica*, *Senecio pulcher*, *Spiraea arvensis*, *Aster dumosus*, *A. Amellus bessarabicus*. You will need to have Phloxes and Delphiniums, the plants being 2½ feet apart, and half that distance from the outside of the border. In the next row, which will be all you will have room for, you may have Carnations, Pyrethrums, *Agrostemma coronaria fl. pl.*, *Anemone alpina*, *Aquilegia glandulosa*, *Anthericum liliastrium major*, *Campanula glomerata dahurica*, *C. Hendersoni*, *Dielytra eximea*, *Erodium Manescavi*, *Geranium ibericum*, *Hypericum Uralum*, *Hesperis matronalis alba plena*, *Iberis cordifolia*, *Lychnis viscaria splendens plena*, *Papaver nudicaule*, *Potentilla formosa*, *Spiraea Filipendula plena*, *Thalictrum adiantifolium*, *Tradescantia virginica*, and var. *alba*, *Veronica longifolia var. subsessilis*, and *Zauschneria californica*. In the spaces between the plants in the second row, but 6 inches nearer the walk, you may have Pinks and low-growing perennials, such as *Achillea tomentosa*, *Adonis vernalis*, *Anemone apennina* and var. *alba*, *Anemone stellata fulgens*, *Armeria plantaginea rubra*, *Aubrietia græca*, *Campanula pulla*, *Cheiranthus alpinus*, *Dodecatheon media*, *Funkia speciosa*, *Gentiana verna*, *Helleborus niger*, *H. niger maximus*, *H. olympicus*, *Megasia cordifolia purpurea*, *Oenothera macrocarpa*, *Phlox Nelsoni*, *P. setacea grandiflora*, *Onosma taurica*, *Oxalis floribunda rosea*, *Primula denticulata*, *P. rosea*, *P. acaulis* double and single varieties, *Saxifraga Camposi*, *Sedum spectabile*, *Silene alpestris*, *Auriculas*, and *Pansies*. The ground should be well dug, and have a liberal dressing of manure. Plant in late March or early April, and if the weather be dry water until established. You can if you desire to do so raise various plants from seed, such as Wallflowers, Sweet Williams, Canterbury Bells, Evening Primroses, Foxgloves; also single Dahlias, with Stocks, Asters, Helichrysums, and other half-hardy annuals in your frame. Roses do not grow well in town gardens, and if you try any order only the strongest-growing varieties.

Table Decorations—Butlers versus Gardeners (H. C. M.).—You say you are fond of artistic work and decorating the dinner-table, but the butler thinks he should arrange the flowers, hence he puts obstacles in your way; and you ask, "What is the butler's right as to the removal of plants and flowers a gardener places on the table?" This is precisely a matter requiring forbearance, tact, much patience, and a little diplomacy. We hope this appeal to us for advice is an evidence that you are in some degree sensible of this, and also that it is the duty of upper servants filling such responsible positions as the head gardener and butler do to take especial care that their employers suffer no annoyance from trivial disputes. No doubt it is trying for a man who has done his best to make the table attractive to see his arrangements interfered with and in his opinion spoilt. But it must not be forgotten that due space must be afforded for the table appointments of silver, glass, and china, and if the butler finds flowers placed in the way of such things it is certainly his duty to remove them, or to request the gardener to do so. That is the point to keep in view—duty, not right. A man who is always standing upon his rights is quite certain to suffer much annoyance, of which the man of duty knows or cares nothing. The question of rights is altogether beside the mark. What are your employers' wishes? Have you been requested to do the table decorations? If so, it is a matter of duty to do them; if not, it is equally a matter of duty to refrain. We know a gardener who has both taste and skill in the arrangement of flowers, and who had long been accustomed to arrange flowers for the dinner table and for all other requirements of a large establishment. Now, this man upon entering upon the duties of a new situation, found it was the custom of the lady to arrange all cut flowers both for dinner table and sitting rooms; he was sorry, for he was fond of the work, but any word of remonstrance from him was clearly out of place, and he quietly supplied the flowers for special occasions, and waited. Nor did his patience and good sense go unrewarded, for the lady was an artist, and he gained many a hint through quiet observation, and when upon an emergency he was requested to arrange some cut flowers for which the lady could not spare time, he knew that his opportunity had come, and did his work so well as to call forth expressions of surprise and approval. Gradually the whole of the cut flower arrangements passed into his hands, and he not only gained his point, but what was of infinitely greater importance, the respect and goodwill of his employers; for they, by this tangible evidence of latent talent and forbearance, saw that he possessed superior ability, and that modesty and self-restraint which are usually found with it. The wishes of the master or mistress of the house must be your guide. Do not by any means attempt to force the customs of other families upon them, or insist upon doing the table decorations as your right. Neither you nor the butler have any right in the matter, and if you contrive to turn that which is intended to afford pleasure to your employers and their friends into a source of annoyance, your services will probably be dispensed with altogether. Assuming in your case that you are expected to arrange the flowers, then do so, and if you find that the flowers are wilfully disarranged and the effect spoilt before the dinner, quietly take an opportunity of mentioning the matter to your employers, and you will have very little further trouble. But we have known families where the groom of the chambers has arranged the whole of the flowers, and others where the butler has done so, and in every case it was taken very much as a matter of course, for with the family in town for the season, and at the seaside in autumn, the gayest and most frequent parties would be given there, and as a matter of convenience the flowers are arranged by some member of the household—generally the butler. We are all more or less the sport of circumstances, and it is by adapting themselves to circumstances that most men are successful in their callings.

Names of Fruits (George Swales).—Baxter's Pearmain (*S. Taylor*).—1, Not known; 2, Dumelow's Seedling; 3, Tower of Glamis; 4, Not known; 5, Hanwell Souring; 6, Loan's Pearmain. (*East of Berwickshire*).—Manks Codlin. (*H. S.*).—Golden Winter Pearmain. (*Kenrick*).—Edinburgh Cluster.

COVENT GARDEN MARKET.—FEBRUARY 4TH.

Good samples of Grapes have well maintained the rise of last week, and will soon warrant higher quotations still. Prices remain the same all round, with business unaltered.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples	½ sieve	2 6 to 4 6	Oranges	100	4 0 to 0 0
Chestnuts	bushel	16 0 0 0	Peaches	per doz.	0 0 0 0
Cobs, Kent	per 100 lbs.	55 0 0 0	Pears, kitchen ..	dozen	1 0 3 0
Currants, Red ..	½ sieve	0 0 0 0	,, dessert	dozen	2 0 6 0
,, Black	½ sieve	0 0 0 0	Pine Apples English	.. lb.	1 6 2 0
Figs	dozen	0 0 0 0	Plums	½ sieve	0 0 0 0
Grapes .. .. .	.. lb.	2 0 5 0	Strawberries .. .	.. lb.	0 0 0 0
Lemons .. .. .	.. case	10 0 15 0	St. Michael Pines ..	each	3 0 7 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes	dozen	2 0 to 4 0	Mushrooms	punnet	0 0 to 1 6
Beans, Kidney ..	.. lb.	0 3 0 0	Mustard and Cress	punnet	0 2 0 0
Beet, Red	dozen	1 0 2 0	Onions .. .. .	.. bunch	0 3 0 4
Broccoli	bundle	0 9 1 0	Parsley	dozen bunches	2 0 3 0
Brussels Sprouts	.. ½ sieve	2 6 3 0	Parsnips	dozen	1 0 2 0
Cabbage	dozen	0 0 1 0	Potatoes .. .. .	.. cwt.	4 0 5 0
Capsicums	100	1 6 2 0	,, Kidney .. .. .	.. cwt.	4 0 5 0
Carrots	bunch	0 3 0 4	Rhubarb .. .. .	.. bundle	0 4 0 0
Cauliflowers .. .	dozen	2 0 3 0	Salsafy .. .. .	.. bundle	1 0 0 6
Celery	bundle	1 6 2 0	Scorzoneria .. .	.. bundle	1 6 0 0
Coleworts	dcz. bunches	2 0 4 0	Seakale	per basket	1 0 1 6
Cucumbers	each	0 4 1 0	Shallots .. .. .	.. .. lb.	0 3 0 0
Endive	dozen	1 0 2 0	Spinach .. .. .	.. bushel	2 0 4 0
Herbs	bunch	0 2 0 0	Tomatoes .. .. .	.. lb.	0 6 1 0
Leeks	bunch	0 3 0 4	Turnips .. .. .	.. bunc	0 4 0 0
Lettuce	dozen	1 0 1 6			



THE LAMBING SEASON.

THE importance of frequent daily and nightly supervision by the farmer of the shepherd and his flock goes without saying, but we may inquire to good purpose as to the kind of knowledge requisite to enable him both to see when anything is wrong, to recognise clearly the cause, and at once to apply the best remedy. Experience, it might be supposed, would enable him to do all this, and to do it well; but we have known men having charge of large farms, with the reputation of being good farmers, who were sadly wanting in thorough knowledge of the cause and remedy of ailments in the breeding flock. The importance of shelter and the best method of feeding is generally very well known and due attention given to it. Nature fortunately requires very little assistance in her operations, and given plenty of wholesome food and shelter from exposure to extremes of cold or moisture, such hardy animals as sheep on the whole do well. There is, however, a certain per-centage of losses from disease, against which we wish to be on our guard, and experience enables us to assert such losses may be reduced to a minimum by the exercise of due care and skill. Ignorance and brutality are not unfrequently to be found among shepherds, and we submit that before a shepherd is entrusted with the charge of a valuable breeding flock, he should be obliged to give satisfactory answers to plain questions as to every detail of management. We have found that where ignorance exists there is generally an obstinate clinging to old customs and practices, however faulty and injurious. In such cases, by the exercise of firmness, and by showing how simple and effective the right method of treatment is, and above all in letting the shepherd take part in what is done, so that he may assume a very big share indeed of the honour and glory of effecting "that wonderful cure," all will go well. We were once much amused, after saving the life of a valuable ewe, by our shepherd slyly assuming possession of our syringe and bottle of carbolic acid and Gallipoli oil. It was a tacit acknowledgment of the soundness of our treatment, and a promise to follow it when necessary, which was eminently satisfactory.

"Breeding ewes are most healthy when wintered on sound old pastures; if roots are plentiful a few may be scattered over the pastures. They can be kept in a healthy state by, say, half a pound per day of Oats or Maize, mixed with a small quantity of hay or straw chaff. They also require free access to pure water, and some rock salt." So wrote a clever manager of sheep, and we agree, only we would add some cattle Cabbage, and we make a point of holding in reserve plenty of Mangolds for the ewes to have after the lambing is over, and the fast-growing lambs make heavy demands upon the ewes for milk. The Oats should always be crushed, and some bran mixed with them and the hay chaff.

The lambs begin feeding in about ten days or a fortnight from the birth, and they should then be upon short grass, and be kept to it for about a month, the change to richer pasturage

being as gradual as possible, sudden changes to rank luxuriant food frequently leading to losses from dysentery and inflammatory fever. The docking is done at from three to four months, according to the strength of the lambs. We decidedly prefer the earlier period, with early strong lambs. Castration is also done at the same time, and regarding which we may express a hope that all brutality has long become a thing of the past, for it certainly has no justification in necessity. Weaning is a matter concerning which there is still considerable difference of opinion. To wean lambs at four months is certainly in favour of the ewes. With high feeding it may be deferred for another month, and we have seen such lambs brought to the July fairs in wonderfully forward condition, ripe for the butcher, and for which, if not soon killed, the only profitable method of treatment is to continue to feed as high as possible for another two or three months.

Many shrewd men of business have long ago found that the cheapest way to produce mutton is by the high-feeding system, beginning as early as possible, and allowing no cessation till the sheep are killed. By so doing it is considered that we turn the green crops, roots, and dry food, consumed to best—that is to say, to most profitable account. That we can now ripen our wethers at from ten to fourteen months at a size and weight equal to that of a two or three-year-old sheep of bygone days. More than this, we have known prices asked and given for lambs only seven months old which at one time could hardly be obtained for two or three-year-old sheep. But with cargoes of 25,000 carcasses of New Zealand sheep coming upon the market he would be a bold man who could venture to assert that the lamb crop of this season will prove as profitable as those of the last few years. Crowd the great centres of population with steady supplies of foreign mutton, and you push back home supplies upon the country districts with the inevitable result of a general depression in prices. High-pressure treatment is, however, a matter somewhat apart from the legitimate business of the home farmer, who for home consumption, at any rate, has to maintain a steady supply of three-year-old mutton of a colour and flavour altogether superior to the forced mutton of the markets.

WORK ON THE HOME FARM.

Horse and Hand Labour.—The advantage of an early application of manure to the pastures is now clearly apparent. Carting of the old mixens of farmyard manure upon the grass was finished some weeks ago. It was spread as quickly as possible, and now the difference between manured and unmanured grass is remarkable, the first being of a dark green hue, with an appearance of growth about it that gives agreeable promise of an early strong growth; the other has a brown impoverished wintry colour, which is as clear an indication of a want of fertility as the dullest intellect could require. Left untouched, we know full well that the growth would be late and feeble, and this knowledge is an incentive to the speedy application of our annual dressings of artificial manures. Frosty mornings have enabled us to cart a dressing of farmyard manure upon some land in which we intend sowing Peas; spreading the manure, ploughing, and sowing, will follow at once. A heavy dressing of manure has also been given to the Hops. We were able to cart on this manure early by letting the wheels of the carts pass along the water furrows, which are made early in autumn by passing the double-breasted plough along the middle of each space between the Hop rows. The manure is being dug in; this done, nothing more will be required till the pruning of the Hop crowns is done about a month hence.

The cutting of underwood is finished, and the planting of Ash, Spanish Chestnut, and Alder is now being pushed on as fast as possible. We find Spanish Chestnut answer so admirably for underwood in our poor thin soil that we have planted about a hundred thousand of it during the past ten years, our practice being to grub old poverty-stricken stools of Oak out of each portion of underwood as it is cut in turn, and to replant, generally with Spanish Chestnut, preference being given to Ash where the soil is heavy and moist, and to Alder for low-lying bogs or swamps. For the ornamental clumps, which we have had to introduce upon certain parts of the estate, we have invariably used Larch for nurses, planting them 3 feet apart, and the permanent trees 9 feet apart.

MODERN FARMING.

At the recent meeting to commemorate the anniversary of the opening of the Columbia Market, London, Mr. George Brown, of Gaysham Hall, remarked that he was sorry that he could not congratulate his brother farmers upon the prosperity of agriculture at the present time. Forty years had passed since he had commenced business as a farmer, and during that period he had never known such a continuous depression in that industry as had been experienced in the last six years. But, "Hope springs eternal in the human breast," and he was happy to think that he had a fair share of it. No doubt this was partly owing to the fact that through all the vicissitudes he had been able to keep his head above water, although his late experiences gave little ground for hope, he thought that in the last month of the old year one little ray of light had penetrated into the gloom. He meant the advance of 5s. per quarter on Wheat. He hoped this would continue, for it was evident that the

foreigner no more than the English farmer could afford to produce Wheat at the ruinous prices which prevailed at the earlier part of the season, and he as one of the former was glad to see that the latter had thrown up the sponge. Farming is different from any other business, as it is not thought necessary to learn it. Lately, however, most of the amateur farmers had been got rid of, still the impression seemed to remain that the practical farmer required a great deal of advice. Some tell him to keep bees and sell honey; others to keep poultry and sell eggs; and again to turn all his land into pasture, and produce fat bullocks. In fact, it seemed as if everyone, except the farmer, knew how to farm. One great panacea for the depression was to advocate a duty on corn, but he for one was not of that way of thinking. He did not believe in running after a shadow, and he felt certain that a duty of 5s. on Wheat would not of itself advance the price to the grower 2s. 6d. What would do more good would be for our legislators to repeal those bad old laws which had almost become obsolete, but which now appear to be restored and to be more arbitrary than ever. In proof of this he pointed to the fact that all the vegetables required by a million of people had to be brought to one spot, and so have a toll put on them at the will of a private individual, an obligation under which East London can never be properly supplied with vegetable food. Whilst such a state of things existed it would be like putting a rent of 5s. per acre on all land that has any pretension to grow vegetables. Bad as that is, it is trifling in comparison to the injury it will do to the consumer, for it is quite impossible to feed such a great number of people properly from one spot by small carts from and to remote distances. The consequence is that the prices have to be put so high that the public does not get half enough.

Only last year he had ploughed into the ground forty acres of vegetables, which he should have brought to market if he could have realised nearly one farthing per pound, and at that very time the consumer was paying 1d. per pound in London for precisely the same class of vegetables as he had to destroy. I have no doubt that much larger quantities of vegetables would be consumed if they could be properly conveyed to the consumer in sufficient quantities at reasonable prices, and I think the best way to increase and distribute such food would be to introduce railway communication direct into a market. It is not generally known that if green vegetables do not reach the consumer on the same day that they are brought to market their value goes down from 50 to 100 per cent., so that in forty-eight hours they are worthless. It is monstrous that in this day our horses should be compelled to drag all vegetables six miles through London, and then other horses drag them back again, all in consequence of a foolish charter.

PRICKLY COMFREY.—In turning over last year's numbers of your Journal for the purpose of having them bound, I notice in that of 13th November last an inquiry from a correspondent about Prickly Comfrey, and an answer appended to it to the effect that it did not answer the expectations of the writer, who says "Horses, &c., refused to eat it, and that they must be brought to the verge of starvation to do so." I wish, therefore, to state that my horses eat it with avidity, though they have oats and hay in abundance. I obtained my plants some years back from Messrs. Sutton & Sons, Reading, and they flourish splendidly, yielding more than I require, as one part is ready to cut again before we have finished the other. My groom approves highly of it as fodder, and uses it constantly, considering it an excellent change.—C. H. P.

OUR LETTER BOX.

Farming (Q).—We are obliged by your card; in the hurry of preparing for press the little mistake was not seen till too late for correction. However, no one could misunderstand the writer's meaning, and few will question the soundness of his teaching.

Fowls Dying (E. A. S.).—The disease is hereditary and incurable, and your only safe plan will be to kill all your present stock and get a healthy breed of birds. Your other question will be answered next week.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 1° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

1885. January.	9 A.M.						IN THE DAY.				Rain In.
	Baromet. at 33" and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
Sunday	30.171	27.2	26.6	N.E.	35.0	40.7	25.4	44.8	18.8	—	
Monday	30.053	36.8	35.8	S.E.	34.8	42.2	26.6	48.8	20.7	0.041	
Tuesday	29.870	43.8	42.9	S.	34.8	50.2	36.4	59.2	33.7	0.010	
Wednesday ..	29.878	47.6	45.6	S.	36.8	49.5	42.9	52.9	37.2	0.032	
Thursday	29.538	52.1	48.7	S.W.	39.4	53.3	45.8	59.8	43.3	0.173	
Friday	29.342	47.2	46.1	S.E.	41.2	51.8	45.3	60.2	40.3	0.090	
Saturday	29.131	45.2	43.2	S.	42.2	51.3	41.3	50.2	34.9	0.229	
	29.712	42.8	41.4		37.7	48.4	37.8	53.7	32.7	0.575	

REMARKS.

25th.—Very fine bright winter's day.
 26th.—Foggy morning; fair midday; damp warm evening.
 27th.—Fine pleasant morning; showery afternoon.
 28th.—Cloudy morning; drizzly afternoon and evening.
 29th.—Dull morning; wet afternoon; fine bright night.
 30th.—Wet morning; fair afternoon; drizzly evening; wet night.
 31st.—Fine early, clouded over about 9.30 A.M.; gusty southerly gale with rain; vivid lightning and loud thunder at 7.12 P.M.
 The first two days cold, afterwards damp and mild, the temperature of Thursday and Friday being almost identical with that usual on the 1st of May.—G. J. SYMONS.



COMING EVENTS

12	TH	Royal Society at 4.30 P.M.
13	F	Quebec Club at 8 P.M.
14	S	Royal Botanic Society at 3.45 P.M.
15	SUN	QUINQUAGESIMA.
16	M	
17	TU	
18	W	Society of Arts at 8 P.M.

NOTES ON FORCING STRAWBERRIES.

IT is not a very difficult matter to have Strawberries all the year round, but this should not be attempted where house room is limited, or where there are no available shelves in forcing houses or pits. If employers insist upon having a good supply of early Strawberries, say from March onwards, they must afford their gardeners reasonable facilities for their culture. In too many places they have to be grown in positions unfavourable to good culture, and where also the Strawberries may prove a source of danger to other more important crops. No plants appear to be more liable to attacks of mildew, green fly, and red spider, and it is almost needless to add that these pests are very liable to spread to other congenial quarters. We grow a great variety of plants in our vineries, but we draw the line at Strawberries, being of opinion that they ought not to be admitted. Some growers may succeed in keeping them clean, but I must confess we are unable to do so, and for this reason would also keep them out of the Peach houses if it could be managed. We have never received any complaint of Strawberries being ripened too early, but if we pick them late in March or by the first week in April everybody seems to be satisfied, especially seeing that at this time they are yet far from being generally plentiful. Besides, there is only one variety that I am acquainted with—viz., Vicomtesse Hericart de Thury, which is really good at that date.

The greater portion of our plants are started into active growth on a continuous suspended shelf running through the early and second early Peach house, fifty plants forming a batch in each house. The earliest house is closed for forcing early in December, and the second house about a month later. As we maintain a rather low temperature at the commencement, or, say, from 45° to 50°, the progress of the plants is slow, but at the same time is very satisfactory, as the roots are in active growth long before the trusses of flowers are expanded. In the case of plants started in a much stronger heat the foliage is apt to be in advance of both the flowers and roots, the result not unfrequently being many blind plants or weakly trusses, and an early attack of green fly. Strawberries to be profitable must have frequent supplies of liquid manure, and the more active the roots are the better will they assimilate the food thus given them, nor will they perfect heavy crops of fruit if the foliage is flimsy and dirty. Hence the necessity for moderate forcing, and also for keeping them away from the hot-water pipes, especially in the earlier stages of growth. A high temperature and a moist atmosphere when the plants are in bloom are also calculated to cause the formation of weakly flowers, and the setting of these, or even strong blooms, under such conditions is by no means easily accomplished. The larger the blooms the better the chance of securing fine fruit, and in all cases we prefer to have a good set even if this necessitates much thinning. When once the crop is set they may be subjected to a much higher temperature, the

shelves in a Pine stove or Cucumber and Melon house being then suitable places for the fruits to swell to their full size. I do not say that the fruits ripened in a high temperature will be of good flavour, but according to my experience size is of greater importance than quality. Employers have no objection to small fruits being sent to the kitchen, but they, as a rule, do not like to see small ones on the table. Our plan of starting the plants in the Peach houses answers our purpose very well, but we rarely ripen any fruit in these positions. Directly a batch has set a crop of fruits these are thinned out to twelve or a few more fruits, according to the vigour of the plant or the habit of the variety, and the plants are transferred to the back shelves of forcing houses, their place in the Peach house being at once occupied with another batch of plants. In this manner the supply if rather small is yet very regular, and that with us is the primary object.

In the case of the earliest batches of plants, or say when but little air is given and the atmosphere is naturally heavily charged with moisture, it is very frequently difficult to obtain a good set of fruit. I have tried syringing with clear water, but on the whole prefer the plan of impregnating with a camel's-hair brush, this being carefully done about mid-day, or as early as the pollen is found sufficiently dry to be readily distributed. From the first the plants are never allowed to suffer by want of water, and any that are very strongly rooted receive an occasional supply of liquid manure to assist the formation of stout trusses of blooms. When the set is effected and the plants are in stronger heat they require much more moisture at the roots, ours being frequently watered twice in a day, and receive fairly strong liquid manure from the farmyard about three times a week. In addition to this a slight sprinkling of some kind of artificial manure is also very beneficial, and Beeson's manure with us proved particularly good for this purpose. The only variety that may be said to ripen perfectly in a strong heat is the Vicomtesse, all others that I have yet grown requiring to be transferred to a shelf in a cool house for the fruit, after being first coloured, to attain a certain amount of sweetness. Unfortunately this variety cannot be grown large enough to please some persons, and in our case, much against my own inclination, we are obliged to discard it in favour of La Grosse Sucrée. We are trying a variety that Mr. Austen had at Ashton Court under the name of Princess of Prussia, but which probably would be more correctly named Princess Frederic William. It is a very early heavy-cropping sort, and produces a second crop in the autumn, but I am afraid neither the colour nor flavour will be quite satisfactory. For the later crops I prefer President to any other, while for superior quality British Queen is the best.

Although I trust the foregoing may prove instructive to some readers, I may as well state my principal motive for commencing this paper was to discuss the advantages attending the use of turves for standing the pots of Strawberries on during the time they are being forced. Many advocate the use of troughs to stand the pots in, these rendering the use of the watering pot of much less frequent occurrence. According to my experience these troughs do more harm than good, and although we have a number here which were made expressly for the purpose they are not used. It is quite true the plants when standing in them require much less water, and it is equally true that these same plants are liable to become much too wet, and to produce fruits that are remarkably sour and uneatable. At the same time where the plants, as in our case, have only dry shelves to stand on, something should be done to prevent them drying at the roots too rapidly, and for this purpose turves are the best. Each pot should be stood on a little square of turf, grass downwards, and this they should not leave until the crop is perfected. Not only will these turves serve to keep the plants from drying so quickly, but they will in most cases soon become occupied with the roots

of the plants, and thereby add considerably to the weight of the crop. The healthier the growth of the plant the less likelihood of insect attacks, and red spider especially will not be so troublesome on plants rooting in fresh turf. Mr. Taylor, when at Longleat, used squares of turf for all his plants, and he grew Strawberries remarkably well, and the plan is also practised, I believe, by many other good gardeners.—W. IGGULDEN.

THE ROCKERY.

THIS term has a very wide meaning, and I would not attempt to write anything about it were it not that my remarks are intended to refer to it as the proper home for Alpine plants. It is difficult to say how a rockery should be constructed, as there is so much difference in surrounding circumstances of almost every place which should be well considered before it is commenced. Two or three general conditions are, however, essential to success—viz., thorough drainage, a good depth of loamy soil, and a partially sheltered yet open position, by which I mean one open to sunlight and air. The size or character of the material is of little moment; irregularity certainly is desirable, but in positions where an irregular surface does not already exist, it is best produced by removing certain portions of the soil and placing it in others, rather than building up huge masses of masonry. In my opinion anything like geological stratification should not be imitated, it serves no useful purpose, and rarely represents natural rock arrangement. Solid permanent work is desirable. It is essential also that stones laid as special ledges for one or more series of Alpines should dip in the right direction—viz., towards the soil, otherwise instead of moisture draining towards the roots it will proceed in the opposite direction. Another very important point is the water supply, especially where a rockery of huge dimensions is constructed; the oversight of this business frequently proves a serious mistake. Arrange taps at suitable distances apart, so that a hose can be applied and plenty of water be given during dry weather. The most successful growers are those who attend thoroughly to this item, suggested by a careful study of the surrounding conditions of most Alpines under natural conditions. I wish strongly to advocate the utilisation of various small shrubs for the ornamentation of the alpine garden; this can be done liberally in most places; and to some extent in all. Of course, avoid coarse-growing plants; in places where Yuccas flourish they are especially suitable, as also are Retinosporas and many others. Diversification as much desirable on a properly constructed rockery, and it can be enjoyed in that form without prejudice.

Where alpine plants are largely grown a small rockery in a cold frame is a very interesting addendum, and should be the home of many rarities which through climatal conditions cannot be accommodated outside; many such I know, and at any time there is much of interest in its occupants. It also answers as the training home for the larger structure outside; indeed, in a hundred and one ways it will prove invaluable in keeping together a choice collection of alpines. Bellglasses or cloches are also very serviceable in connection with rockeries for the purpose of protecting certain plants through the winter and for covering others while in flower; such, for example, as those which come early and are thus exposed to many ills, the natural issue of our climate.

I have been induced to write the above remarks because I consider the present the very best time to construct new or make additions to already existing rockeries. I prefer the early months of the year to any other period, because we may assume the plants will be in their places by early spring, when they will at once start, and although not much can be expected from them the first season they will have a long time to establish themselves before winter. A few words as to the treatment of old rockeries. First let them have a thorough cleaning. Remove all weeds, decayed leaves, and other litter which accumulates, and then give a good top-dressing. This, in my opinion, is better done in autumn than now, as it keeps the plants warm and induces fresh root-action, which is the best indication of what we may expect; but I have noticed several recently which have not received such attention. The best top-dressing material for general work is one composed of old hotbed manure, leaf soil, and coarse gritty sand in equal proportions. Pass the manure and leaf soil through an inch-mesh sieve and mix well with the sand. Apply a dressing of this 1½ or 2 inches deep, and the result will fully prove its value to the plants, while the appearance is greatly improved. For applying the top-dressing it is desirable to break up the surface of the old soil with a small hand fork. There are excep-

tional plants to which such a mulching might prove hurtful, but not many. Some are marked as fastidious in this respect—for instance, I have heard really good culturists say, "Never give *Gentiana verna* leaf mould," and I have seen the same plant doing happily with a good per-centage of that material. Such kinds as will not stand the top-dressing described will not object to a dressing of sharp sand, which may be sprinkled amongst the shoots and round them. No harm, I think, it may be safely assumed, can be done, and in most cases much good will accrue. *Gentiana bavarica* offers good evidence on this point, for it seems absolutely impossible to grow it successfully unless well supported by sand in a cool damp situation; with such treatment it flowers freely. Many of the *Campanulas*, *Edrianthuses*, *Primulas*, &c., require similar treatment. I wish to recommend the introduction where possible of pretty small-growing bulbs. Plant them in every available cranny, or between small tufts of alpines even; they look especially happy when in flower and at no time are they an inconvenience. The price of many bright little gems is now so low that they might be extensively employed this way, such as *Chionodoxa Luciliae*, *Galanthus*, *Erythroniums*, *Scilla bifolia* and its varieties, species and varieties of *Crocus*, &c. Many clumps of these and many other choice bulbs might be accommodated on the rockery beneath a light carpeting of such plants as *Draba azoidea*, *D. gigas*, and many others, so that the surface would be furnished all the year, and in season with the brightness of the bulbs and supplementary plants, without any material prejudicial effect upon each other. Of course it is desirable to thin out the carpeting plants occasionally, or they may render the life of the bulbs anything but happy. Many Anemones, such as *A. apennina* and its varieties *alba* and *blanda*, *A. Robinsoniana*, *A. dichotoma*, &c., are most desirable on the rockery, but they leave a blank for so long in the year which is scarcely compensated for even by their modest beauty when in flower. Surely we can find some small-growing alpines which will clothe the surface without injury to the Anemones.—T.

CULTURE OF THE CUCUMBER.

[The following essay by Mr. James Inman, Chapel-Allerton, Leeds, was awarded the prize as the best paper on Vegetable Culture in the recent competition of the members of the Leeds Professional Gardeners' Friendly Benefit Society for the prizes offered by Mr. Henry Oxley.]

THE Cucumber is one of the earliest mentioned vegetables in history. It was very extensively used in Egypt, the Romans were very partial to it also, and it has consequently been cultivated for many centuries.

The propagation of the Cucumber is effected by means of seeds, cuttings, and layers, but that by seeds is most generally resorted to. They should be sown in a compost of one-third fibrous loam, one-third of peat, and one-third of leaf mould and silver sand. They are best sown singly in 3-inch pots, or three seeds may be placed in a 6-inch pot, the seeds to be pressed gently into the soil to the depth of half an inch. Those sown singly are less likely to be injured at the roots when repotted or planted out in the beds. The pots should be plunged in a bed having a bottom heat of 75° or 80°, and a top heat of about 70°. Those sown in December or January will be ready by March or April for cutting, and those sown later will be ready proportionately sooner. As the season advances, propagation by cuttings is often resorted to when plants are required for winter culture. These should be taken from the ends of strong shoots and inserted in pots 9 or 10 inches deep, half filled with the compost mentioned for seeds, a sheet of glass being placed over them to retain the moisture round them until roots are formed. The pots should be plunged in a genial bottom heat, and plunged again when struck until wanted for planting. I have found them strike well in a pan of water placed in the stove and shaded from the sun.

The general method of growing the Cucumber is by means of fermenting materials, and the one most in use is fresh horse manure from a stable. It should be placed in a heap, thoroughly mixed two or three times, allowing several days to elapse between the turnings, and if it be too dry a gentle watering might be given during the turnings, care being taken not to make it too wet; as if that is the case it does not retain the heat for the length of time it would if it were only reasonably moist. The leaves collected in autumn and kept in a dry place might be mixed with the manure, as they help to retain the heat for a much longer period than manure alone, especially Oak and Beech leaves. After the heap is in a good state of fermentation the bed must be formed, the depth to vary according to the time of year. The earlier it is made the deeper it should be. After marking out the ground, and allowing 6 inches to a foot more

space than the size of the frame, the material should be well mixed and beaten into the bed, from 4 feet 6 inches to 5 feet at the front, and 5 feet to 5 feet 6 inches at the back, early in the year, while later in the season the bed may be made much thinner, say 3 feet thick at the front to 3 feet 6 inches at the back. When the bed has commenced heating, a layer of soil may be placed on the manure 4 or 5 inches thick. The compost for early Cucumbers should be equal parts of light fibrous loam and sweet sandy peat, while later Cucumbers may be grown in any good turfy loam. I have found the roots to extend very freely in fresh hops from a brewery mixed in the soil. When the bed has been made about ten days or a fortnight it should be tested with a stick or thermometer, and if the heat is from 75° to 80°, the plants may be placed out in the centre of each light if the space is limited, but if they are of a good width and length two plants may be put in each, equidistant from each other and the sides of the frame. They should be planted on a raised heap of the soil, and as the roots appear more of the compost should be drawn up to them.

As soon as the plants have made the second rough leaf they may be stopped at that joint, and as other shoots are formed these should be pegged down and stopped at every second joint, care being taken that the shoots are trained to equally cover the bed. As the fruit is formed it can be trained straight in glass tubes blown for the purpose, or where this is not required they can be allowed to grow naturally, but in very hot weather they are apt to curl. I remember reading a number of years ago that female blooms were more apt to form in a low temperature, and male blooms in a high temperature, and my experience with that of the gardener whom I was then under abundantly confirmed this. Shading from the mid-day sun should always be attended to in very hot weather, and must be given from ten or eleven in the forenoon until two or three in the afternoon according to the season. Ventilation must be carefully attended to, the object being to keep the temperature from rising too high rather than lowering it by the sudden inrush of cold air. The temperature at which the frame should be kept is from 70° to 75° at night, and 75° to 80° by day, and it may be raised to 85° or 90° by sun heat, care being taken to afford shade. In the early part of the year the lights must be covered at night with a good covering of mats or frames thatched with straw to keep out the cold, and the sides of the bed are best protected with long hay or straw for the same purpose. Nothing more is required but lining the beds with fresh materials to prevent the heat becoming too low; the two sides of the bed may be lined at one time, and the back and front at another.

Many gardeners who have pits at command grow the Cucumber by means of hot-water pipes under the bed, and some have pits heated by flues under the bed, but those heated by hot water are much better. The pipes or flues should be so arranged that an equal heat of 70° to 75° can be kept under the bed, and a top heat of from 75° to 80°. The plants must not be stopped, but trained to a stick until they reach the trellis, they may then be stopped and trained the same way as those grown in frames. The frames or pits must always have the atmosphere moist, as there is nothing so injurious to the growth of the Cucumber as dry air. The frames and pits may be closed in the afternoon at a temperature of 80°, and the plants in the frames can be moistened with a fine rose, while those in the pits may have a gentle syringing, care being taken that the water used is of the same temperature as the air in the pits or frames.

The Cucumber is liable to few diseases if kept in a vigorous growing state, and it is generally neglect, or want of proper heat and materials, that causes disease to attack them. Gumming and canker are generally caused by a deficiency of heat in the beds and the too free application of water, especially when the water is cold. This may be checked by increasing the temperature and having a drier atmosphere in the frame or pit, while dusting the parts affected with powdered charcoal has often been found to check it. When Cucumbers have a bitter taste it is caused by being grown in too low a temperature, as the sap is not sufficiently elaborated when they are so grown. Mildew is chiefly caused by a too dry atmosphere; this can be checked by increasing the moisture and dusting the leaves with sulphur, but it rarely occurs where syringing is practised.

One of the pests that infest the Cucumber is the red spider. This can be destroyed by sulphur in the form of vapour, but that needs much care, and frequent syringing with water mixed with sulphur is the safer remedy. Green fly often is found on the plants, but it can be destroyed by one or two thorough fumigations.

The standard of merit as a guide for those growing Cucumbers for exhibition is—Length from 12 inches upwards; diameter about one-ninth of the length; colour a deep green;

circumference circular and even throughout; length of neck and nose about the measurement of the diameter; flesh firm, crisp, and juicy, and the flower remaining on the fruit. A few of the best varieties which I have grown are—Duke of Edinburgh, Kirklees Hall, Pearson's Long Gun, Sion House Improved, Pearson's Improved Telegraph, Tender and True, and Blue Gown, and the one among them which I prefer for general purposes is Improved Telegraph. The general rules to be followed in growing the Cucumber are—a genial bottom heat, plenty of moisture, and a sweet soil.

CHRYSANTHEMUMS FOR BEGINNERS.

Now that Chrysanthemums are so popular a few hints for beginners on their cultivation may not be out of place.

I am afraid that the propagation of the Chrysanthemum is not sufficiently understood by many who would like to grow it well. Striking the cuttings is an important item in their growth. A common idea is that they require bottom heat. This is quite a mistake, as the application of heat at this stage tends to weaken the after growth of the plants. The great point to bear in mind through the various stages of growth is that they should be grown as sturdily as possible, never exciting them so as to draw them up unduly, particularly in the early stages. The best of all places to strike them in is under handlights placed in a house having a temperature of from 40° to 50°, failing this convenience a cold frame is suitable. My reason for preferring a cool house to a cold frame is that much time is often lost when they have to be struck in a frame through severe weather. I have seen them frozen hard in the pots for a fortnight. This will not kill them, but while they are under this process they are not making roots, and of course must be losing time, and if they are protected from frost they must be covered, sometimes several days, which renders them liable to suffer from damp; certainly they are more checked in this position than if they were inside a house where light would never be obstructed.

Any time during January or early in the present month is a good time to commence inserting the cuttings, which should be carefully chosen, those springing from the roots at some distance from the stem, commonly called suckers, are the best. Those taken direct from the stem are apt to show bloom buds during April, and seldom do any good after that early stage. Thus stout sucker cuttings 2 to 3 inches long, taken as directed, are the best, these being inserted singly in pots 2½ inches in diameter, using loam and leaf soil and silver sand in equal quantities, with the addition of a little sand placed on the surface. Insert them firmly in the soil, give a good watering to settle the soil around them, when they will require very little more water until rooted. If handlights are used place a layer of coal ashes for the pots to stand upon, this tends to keep them sufficiently moist and cool. Until roots are formed the lights must be kept closed daily, with the exception that they be taken off for an hour in the morning to evaporate condensed moisture. Shading will not be required. In from a month to six weeks they will be rooted, and we should then admit a little air daily, increasing the supply until the lights can be taken off. They should then be placed on shelves near the glass to prevent their becoming weakly. At this stage do not allow the soil to become dry. In about two months they will be ready for their first shift into 60-sized pots or 48's, using a light open compost of loam and leaf soil in about equal parts, with a free admixture of silver sand and charcoal. Pot firmly and return to the shelf, admitting air freely to induce sturdy growth. As soon as they have taken to the new soil they should be moved to a cold frame and be placed on a hard bottom of coal ashes. The lights may be drawn off entirely when the weather is favourable.

At this stage it must be determined what system they are to be grown under, whether for large blooms, bush plants, or dwarf plants for cutting down, or as some term them, naturally grown plants; I mean by this latter term those grown from one stem and allowed to bloom as they may in quantity. For the amateur or beginner the bush system is a good way, for by that means a quantity of blooms can be had which make a good show, and are more easily housed than the tall plants as grown on the large-bloom principle. The point of the plant must be pinched out to induce side shoots to form, and when these are about 4 inches long they should again be pinched, and by the time these break there will be about eight stems to each plant, which, if allowed to grow, will make a handsome plant and produce a great quantity of blooms, either for cutting or home decoration. If large blooms are preferred pinch the point out of the plants when about 6 inches high, and when they break select the two strongest shoots. This stopping of the main stem induces a dwarfer habit. Allow the two selected shoots to grow, and after

a time they will branch into three more each, which will produce six good blooms on each plant. If extra large blooms are desired remove some of the shoots. About the end of March or early in April a shift into 32 or 24 sized pots will be necessary, this time using soil similar to the last, with the addition of some well-decayed cow or horse dung. Early in May the plants should be placed out of doors in some open but sheltered place, paying great attention to the supply of water.

Towards the end of May or early in June they can be placed in their largest pots, these should be 9 or 10 inches in diameter. This time the soil may be made richer by the addition of more manure and bone dust, and pot firmly. The plants may then be placed in an open position, one row on each side of a path is a good place for them; attend carefully to them with water. When the pots are full of roots, liquid manure should be given them about four times a week. Many growers have their special manures for this purpose. Drainings from the dunghill of the farmyard answer well, with an occasional sprinkling on the surface of the soil of Clay's Fertiliser, washed in with clear water during hot weather. Syringe the plants in the evening, and keep them carefully tied to prevent the wind breaking the shoots. Early in October the plants will require housing for fear of frost; they should be in a light house, and as close to the glass as possible. Still continue giving liquid manure freely until the blooms are partly expanded, when it may be discontinued. There are many other details in connection with *Chrysanthemum* culture that cannot be fully dealt with in a short article like this, but I hope at some time to give exhaustive details of the mode practised in producing exhibition blooms. Still I hope these few remarks may prove of service to a few readers, particularly in the propagation of the plants.—E. M. MOLYNEUX, *Swanmore Park, Bishops Waltham.*

TRENCHING GROUND.

WHEN I read Mr. Iggulden's first letter on this subject I failed to see how he seriously differed from the orthodox practice and teaching of the present and past generation of gardeners, neither did I anticipate that he would receive many severe raps on the knuckles, of which he feigned to be apprehensive, unless he were misunderstood by his readers, which unfortunately happens to be so. The fact is Mr. Iggulden does not object to trenching, except in those instances where a foot of clay is brought to the surface, or cultivators struggle with the pickaxe to move some other crude material so as to change its position with the top soil. Indeed beyond the sceptical heading of Mr. Iggulden's first letter I cannot trace in what way he is likely to interfere with old-established doctrines in relation to trenching. All the leading gardening operations are clearly defined in books written on the subject. The horticultural journals of the present day are equally explicit on all kinds of garden work. Now if there is one subject more than another upon which writers of the present and past generation are unanimous it is that of trenching. We may therefore reasonably conclude that the reading class of those engaged in cultivating the soil have continued to practise on the lines indicated in the literature of the subject. Now and then we meet with a novice of the amateur class who acts differently, but Mr. Iggulden may rest assured that by gardeners trenching is judiciously performed; what evils there may be are confined to his own imagination. Gardeners may differ as to the disposition of the first layer of manure, or even vary their practice, as we do here. Our subsoil is clayey sand, which is forked up and left in lumps. If we have any long half-decayed litter we place a few inches upon it, otherwise we throw on the top spit of soil and short manure on that.

I contend that no mischief can be done by bringing up a couple of inches of this subsoil each time the ground is trenched, and unless it is intended to sow small seeds it may remain on the surface, and when the particles lose their cohesion they get intermixed with the black mould. Any plants that may be inserted in it will have their roots just below the raw material. Large seeds, such as Beans and Peas, are easily sown in it. I am here alluding to the best method of dealing with old gardens where only the top spit has been moved for a number of years, as was the case here, where I have had substantial proof of what trenching will do. I took charge in the month of June, and found all unoccupied ground either dug or ridged, which in due time was planted with winter vegetables. Much to my annoyance they were nearly all on their sides before the winter, so much had they clubbed that they had no hold of the soil. The family being absent only about six quarts of Peas were sown, and we did not gather a bushel from them, as some of the rows did not reach above the small sticks, but turned yellow and died.

Bastard trenching and growing a great quantity of Celery was the method I adopted the following year. For this crop the ground was heavily manured and dug, the trenches thrown out the depth of the spade, and the bottom stirred with the fork. By the time the manure and soil had been put in the trenches were even with the surface, and the roots had all the best soil to run in, whilst if I had made the trenches deeper they would have been enclosed between two clay walls. To secure sufficient friable soil for earthing I allowed 6 feet between the trenches, and to complete the process we had to use clay for the outer side to bank up. After earthing was completed the spaces between the trenches were

loosened, and again as the Celery was dug the clay used for banking was carefully replaced where it came from. I have now some trenches so served on a piece of ground not connected with the garden that are just 4 feet from the top to the bottom, and this is the fourth season in succession that it has been so cropped. The manuring for the following crop has been done by placing the manure in the spaces between before the Celery is lifted. The clay is much more tenacious than in the garden, and for four months water has been between the trenches. For this reason I use manure that has not been many weeks out of the stable; in fact it is more like dirty straw than manure, and it serves for drainage as well, being more agreeable to the feet when the Celery is dug than 2 or 3 inches depth of water would be. I maintain that by trenching I have not only secured a deeper root run, but I have increased the temperature of the top soil by drawing the water 18 inches lower down and giving it a chance to get into the drains.

It is needless to supply proofs of the benefits derived from trenching, for Mr. Iggulden is already convinced of them, and we find at page 81 that he has been busily engaged in trenching two quarters for Roses, and for aught we know at the very time when he penned his first communication on the subject, and told us "the whole business had been overdone." I have not that number of the Journal by me, but I think he instanced several crops that did not require it. Though gardeners rarely make a practice of trenching expressly for them, as the ground has been so treated for some previous crop, and the growing of Celery also answers the purpose of trenching. However, I doubt if Mr. Iggulden or anyone else ever saw any of the crops he names refuse to thrive on heavy soil because it had been properly trenched 2 feet deep. Light soils such as some of the market gardens round London, where you can thrust a walking-stick down to the handle, need no trenching, and is seldom subject to any more than bastard trenching.

How Mr. Iggulden has arrived at the conclusion that it is possible to have too deep a root run for vegetables I cannot understand, but probably he is no more serious over this than about trenching. It would be interesting to know what kind of plants object to a suitable root run of 2 feet. Roses it appears do not, but there are numbers of vegetables that send roots down to a greater depth than any Rose. Those of such a small plant as the Onion are frequently found 2 feet down, and I have even found those of Endive at a similar depth. I therefore relate what a deep root run did for Peas. The ground was well manured and bastard trenched, and before we could sow the seed some alterations took place, and the best of soil from some foundations as well as a portion of an old Peach border was wheeled on to the depth of 2 feet, but before doing so manure, of which I had an unlimited supply at that time, was spread on the surface. Three sorts of early Peas were sown, which grew 8 feet in height, and were supported by poles and strings. We gathered from them until some time in August, and when cleared away to make room for another crop they were then green three parts of their length, and would have supplied several boilings, whilst two crops sown after them had been cleared away some time previously.—W. P. R.

I HAVE read with interest the articles on trenching, and shall be glad to add a few notes from my own experience. The garden of which I now have charge was formed from a field some ten years ago. The top spit was a fairly good light friable loam, which only needed ordinary good management to produce good crops. The second spit consisted of the coldest and most unmanageable waterlogged mass I ever had to do with. It was drained about 4 feet deep and trenched 2 feet deep, so that the top spit is now a crude wet mass, in which nine-tenths of the seeds that are sown decay. Had this been drained 2 feet deep, and the second spit only loosened and left where it was, the garden would now be a pleasure and a profit to all concerned in it. I have known other instances where trenching has proved a disadvantage.—J. D. N.

TWO GOOD FRUITS.

PEAR BERGAMOTTE ESPEREN.—I have been enjoying this delicious Pear for the last three weeks, and have found it of better quality this year than ever before. The fruit is of medium size and the flesh very luscious. It is ripe when Pears are comparatively scarce, and I strongly recommend it to planters as a good and early bearer. It makes a very good pyramid. I find the fruit does not blow off, although bearing in large clusters. It was the only Pear in my garden that carried a full crop last season.

APPLE D'ARCY SPICE.—This Apple is not very well known except in Essex, but it deserves wide cultivation. From Christmas to March it is fit for the table, and it is most delicious, with something of the Ribston flavour. I far prefer it to the latter. It is a fair-sized Apple, green, covered with russet, but turns yellow as it ripens; but I have seen it in March quite green, though thoroughly ripe. I do not think from what I hear that it bears early, but I know it to be a good bearer when it attains some size. It is the favourite Apple hereabouts, and commands a price nearly double that of other good kinds.—H. S. EASTY.

NATIONAL AURICULA, NATIONAL CARNATION AND PICOTEE SOCIETIES (SOUTHERN SECTION).

THE schedules of the above Societies have been issued to all subscribers as far as their addresses could be ascertained. There may be members who subscribed for the first time in 1884 who have not yet received them. The treasurer, Mr. Rolt, of 170, Hartfield Road, New Wimbledon, has applied twice to Mr. Dodwell for an account of the funds

and a list of subscribers for last year, but has not yet received any reply. Under these circumstances the Treasurer would be glad to receive promises of support. This can be given in various ways. The first and best is for each subscriber to obtain a new one; the second would be for those interested in the success of the Societies to double their subscriptions; or thirdly, to give a donation for this year, and so place the Societies again on a sound financial basis. Members who have not yet received copies of schedules and a subscription form, can do so by applying to Mr. Rolt.—J. DOUGLAS, *Great Gearies, Ilford.*

REVIEW OF BOOK.

Cactaceous Plants: their History and Culture. By LEWIS CASTLE. London: *Journal of Horticulture* office.

THIS is a veritable *multum in parvo* which every plant cultivator should possess, and it forms an important addition to the series of practical volumes which issue from the office of the *Journal of Horticulture*. Already it has been justly remarked that its pages are replete with historical and botanical as well as practical matter, so that all who are interested in this wonderful family of plants will find in this treatise a valuable source of information. The advent of this work is all the more important from the fact that there is no other of any value available in our language. Here all the best practical knowledge is brought together, and the cultivation of the useful flowering kinds, such as the Epiphyllums, is so well treated, that for them alone the book is more than worth its very small cost; indeed it should be possessed by all who wish to make the most of those plants, and then we should expect to see them generally much better grown than is often now the case. There are many other kinds that ought to be grown, either on account of their wonderful form or the beauty of flower, and a perusal of this work is likely to lead to the cultivation of many, more uncommon now than their merits deserve. Practically all the best are pointed out, and though the list might be extended, it is long enough for the scope of this work.

Its plan is all that could be desired. Short and concise chapters are given on structure, distribution, diseases and insects. General culture is comprehensively treated in an early chapter, and this is followed by another on propagation. The genera follow in order, as in the "Genera Plantarum;" then under each genus a general account of it is given, followed by special culture, and a description of the most select species. At the end of the book is a useful list of figures, which might, however, be improved by giving the obsolete and present names in distinct type, with references from the former to the latter. The list of contents guides easily to all in the book, but it is worth, in my opinion, a more extended index. These matters, however, do not interfere with the usefulness and purpose of the book. There are fifteen illustrations which convey an excellent idea of the subjects they represent. Those who know most of Cactaceous plants will find in this a readable work, for in addition to botanical and cultural details there is a considerable amount of incidental interest throughout. The author has produced a safe guide for amateurs, a work of generally acceptable character, and one that should be found in every library for garden reference.—R. IRWIN LYNCH, *Curator, Cambridge Botanic Gardens.*

In addition to the above voluntary contribution the following opinions are selected from many others of a similar kind which have also been received in reference to this treatise.

Sir Joseph Dalton Hooker, M.D., C.B., F.R.S.—

"Very useful, and will encourage a love of these singular plants."

Edmund Giles Loder, Esq., F.L.S., Floore, Weedon, Northamptonshire—

"Just the kind of book required by amateurs, and will, I think, give an impetus to the cultivation of this most interesting class of plants."

F. W. Burbidge, F.L.S., Curator of the Trinity College Botanic Garden, Dublin—

"A presentable volume, which will, I have no doubt, tend to make the 'Hedgehog' family more popular."

J. T. Peacock, Esq., Sudbury House, Hammersmith—

"Very useful and interesting to amateurs."

Dr. A. Paterson, Fernfield, Bridge of Allan, N.B.—

"The volume on Cactaceous Plants is very interesting."

Mr. Bruce Findlay, Curator and Secretary, Royal Botanic Gardens, Manchester—

"I have read with pleasure and profit the interesting book on Cactaceous Plants. The portraits are exceedingly well done, and the matter contained in the book is both instructive and entertaining. It ought to have a large circulation."

THE ROYAL GARDENS, KEW.

THE authorities at the Royal Gardens, Kew, have recently adopted some improved regulations in reference to the admission of young gardeners to that establishment, which will be welcomed by all admirers of our famed national gardens. One important and much-needed alteration is in the rate of remuneration, which has been advanced to 18s. per week, while in addition there are the usual chances of promotion for deserving men. Of late years considerable advances have been made in the cultivation of the extensive collection of plants at Kew, and it is in every way desirable that the standard should be rendered as high as possible in a garden of such importance. It has long ceased to be a mere botanic garden, which is often mistakenly regarded as synonymous with collections of "weedy" plants of no use in private gardens, but it has

become the finest school in Europe for obtaining a general knowledge of plants and their culture. As a place of public resort there are many difficulties to contend with at Kew, and in several cases it is only by the most careful and experienced supervision that the plants can be preserved in good condition, but efforts are being continually made to reduce the difficulties as much as possible, and the healthy development perceptible in all departments is most satisfactory.

The rules now adopted are as follows.

Applicants for admission as gardeners into the Royal Gardens are furnished with a form, which, when filled in, must be signed by their present or last employer, and returned to the Curator, accompanied by a letter in applicant's own handwriting.

The wages are 18s. per week, with extra pay for Sunday duty. Applicants must be at least twenty, and not more than twenty-five years of age, and have been employed not less than five years in good private gardens or nurseries. Preference will be given to men who have had most experience in the cultivation of plants under glass, and no application will be entertained from men who have not had some such experience. Where obtainable testimonials from known practical gardeners should accompany the application.

The applicant will be informed if his name has been entered for admission, and, on a vacancy occurring, he will receive notice to that effect.



Fig. 22.—*Vaccinium erythrinum*

Should there be no vacancy within three months from the date of application it must be renewed if employment at Kew is still desired. If not renewed the applicant's name will be removed from the book.

Gardeners who remain at Kew a year, and whose conduct is satisfactory, will be eligible, as vacancies arise, for the positions of sub-foremen, and will be recommended according to the capacity of their display, for employment in other first-class gardens either at home, in India, or in the Colonies.—

J. D. HOOKER, *Director.*
J. SMITH, *Curator.*

VACCINIUM ERYTHRINUM.

ALMOST any plants that flower at this time of year are welcome in the greenhouse, and that of which a small bunch is shown in fig. 22, though not remarkable for its richness of colour, is well worthy of a place in collections. It is of strong habit, producing its flowers freely in December and January, and can be readily grown under the ordinary treatment afforded to greenhouse plants. The flowers are of a peculiar dark purplish red colour, and are borne in racemes at the extremities of the bunches. It has long been an occupant of British gardens, but appears to be very little known.

THE DUKE OF BUCCLEUCH GRAPE.

For the information of your correspondent "Vectis" I advise him to expose the young rods of the Duke to the full light of the sun during the

summer, and get the wood well ripened, and at pruning time he should leave six to eight eyes of this rod, which will show fruit at every eye. The secret of getting this and other vigorous Vines to be fruitful is to have the wood well ripened. Here we prune this Vine on the old spur system, leaving from two to three eyes, and we get any amount of fruit. I have seen this Vine inarched on another and the young rod grown under the shade of other Vines. Next season it showed little or no fruit, and was then abused as a Vine that would not bear!—W.M. THOMSON, *Tweed Vineyard*.

In reply to your correspondent "Vectis" I have to say that what I practise and have recommended in cropping this splendid Grape is either to leave three or four buds of each spur or to crop it on young rods. There is a house full of it here, and for many years I have adopted the last-named method. The bearing rods are 4 feet apart, and between each pair a young rod is produced. At pruning time the rod that bore fruit is cut down and sends up a growth for bearing next year, and so the system is carried on year after year. Abundance of fruit is produced under by no means favourable circumstances. The Vines were planted in 1869, and the roots are all in an outside border.—D. THOMSON, *Drumlanrig*.

ORCHIDS AT FERNFIELD, BRIDGE OF ALLAN.

I DO not remember seeing the Fernfield Orchids more attractive than they are now. Many beautiful sorts are flowering, with ample promise of others to follow, and the perfume is delightful, with, of course, vigorous health and growth everywhere. The skilful treatment of Mr. Kidd is seen at a glance. No wonder cases of "Orchid fever" in the district are reported. Any lover of flowers within reach of Dr. Paterson's may have a treat by calling at Fernfield, Bridge of Allan.—NORTHERN AMATEUR.

THERE is now a fine display of Orchids in the Fernfield collection, as the following will show:—

Cattleya Trianae, in abundance.	Sophronis grandiflora.
C. Symei.	Leptotes bicolor.
C. labiata Percivaliana.	Zygopetalum Mackayi.
C. cristata, several good specimens.	Z. intermedium.
Laelia superbiens (large plants with four spikes).	Phalænopsis Schilleriana.
L. harpophylla.	Odontoglossum Alexandrae (a great number).
Cypripedium Haynaldianum.	O. Pescatorci.
C. Sedeni.	O. Rossi majus.
C. villosum.	O. triumphans.
C. pardinum.	O. cordatum.
C. Maulei.	O. prænites.
C. venustum.	O. Uro-Skinneri.
Cymbidium Lowii (six spikes).	O. nebulosum.
Oncidium serratum.	O. pulchellum.
O. linguiforme.	Lycaste Skinneri (a fine lot).
O. incurvum.	L. Skinneri alba.
Vanda Cathcarti.	Masdevallia ignea.
V. tricolor Patersoni.	M. tovarensis.
V. suavis.	M. amabilis.
Dendrobium Wardianum.	Angraecum sesquipedale.
D. Ainsworthi.	Pleione humilis.
D. nobile.	Pilumna fragrans.

The Cattleyas and Odontoglossums are now flowering grandly and render the houses very attractive. The plants are all in the best health, and most creditable to the gardener, Mr. Kidd, who, I understand, is desirous of obtaining another situation farther south.—AN OCCASIONAL VISITOR.

[We have received from Dr. Paterson a spike of three flowers of an early-flowering Cattleya Trianae, which is from a plant bearing three similar spikes. It is a lovely variety with blush sepals and petals, and an intensely rich crimson lip, also possessing a strong perfume.]

ROSE MILDEW—GYPSUM.

SOME correspondence having appeared in your columns with reference to the above, it would be well perhaps to consider mildew which affects other plants in order to experiment in the hope of destroying it in Roses. Hops are likewise subject to a "mould" or mildew, which Mr. C. Whitehead remarks in his treatise on "Hops from the Set to the Skylight," "is due to an insidious parasitic fungus, known as *Spærotheca Castagnei*, of the group *Erysiphe*, allied to the fungus which causes the mildew in Vines." Sulphur is applied to Hops in the form of flowers of sulphur by means of a machine called a sulphurator, which dusts it over the plants, and it is generally considered to be a cure for the mildew, and a preventive if put on early. An agricultural chemist, in giving a lecture on the subject to a farmers' club in this neighbourhood, gave it as his opinion that if sulphur was applied in an available form to the roots he believed that it would prevent mildew. A Hop grower afterwards stated that he had found this theory corroborated by practice, and that having applied sulphur in the form of gypsum to his Hops they were very free from mould, while his neighbour's on the other side of the hedge were badly attacked.

The above chemist stated that sulphur as applied by flowers of sulphur is not assimilable by the roots, while it is when supplied in gypsum. As an analogy the human frame needs phosphorus and potash, but they cannot be taken in the crude mineral form without doing as much harm as good, while if taken in an assimilable form in vegetables they are of great benefit. Hence those growers who have applied quantities of sulphur at a considerable expense to the leaves have only derived a temporary and incomplete benefit, and have not gone to the root of the matter; while it seems that if the sulphur is applied so as to be taken into the substance of the plant, it will not be susceptible to the

disease. Gypsum being composed of lime fifty-six parts, dry sulphuric acid eighty parts, and water thirty-six parts, is a good and cheap medium for applying sulphur and lime to the soil when required.

As I have a quantity by me for use on my farm, I intend giving my Roses a dressing with it this winter in order to see if it has a beneficial effect. As some of your readers may like to try it too, and may not know where to get it, I may mention that I get mine from the Sub-Wealden Gypsum Co., Hawkhurst, Sussex. Sulphur can also be supplied as a manure in the form of sulphate of ammonia, superphosphate, and gas lime, but I should hesitate to use the latter unless put in the ground some time before the Roses were planted in case it killed them; and for my own part I prefer to use gypsum and bone meal rather than superphosphate.—WALTER KRUSE, *Maidstone*.

THE reason I have not replied earlier to Mr. Clayton's letter on this subject (page 49) is not because I believe it to be exhausted, nor because it is uninteresting and unimportant, and not because I think he is any nearer to "the root" of the question than when he first raised an objection to my brief reply to "H.'s" inquiry, but simply because I hoped others, both practical and philosophical, would give us the benefit of their experience and knowledge respecting this insidious and in some respects mysterious and troublesome foe. I should not like to appear discourteous to Mr. Clayton by not replying to his very practical and, in some respects, suggestive and excellent letter, nor should I wish him to imagine by my silence that I was convinced by the arguments he has adduced, nor that his direct contradiction of my statement that "mildew is more prevalent in cold wet summers" has confounded me. It is some satisfaction to me to learn that it is on his own responsibility he does so. As to his claim of support in this view from so eminent a fungologist as Mr. Worthington Smith, I venture to think if, as Mr. Clayton suggests, I have not, compared with himself, "read Mr. Smith's article so carefully," I have at least succeeded in interpreting that gentleman's meaning more correctly.

When Mr. Smith says "the spores of Rose mildew very soon perish in the air, they cannot withstand dryness, heat, moisture, or cold," I fail to see why Mr. Clayton should, even for argument's sake, so resolutely seize hold of the two last and least destructive agents of mildew—moisture and cold, and altogether taboo the two former and most potent ones—dryness and heat, and conclude forthwith that therefore "cold wet summers are not the more favourable to its growth." This line of argument is scarcely fair to the author of that quotation, nor likely to convince his readers; because if the whole of the quotation was used in the same sense it would imply that as dryness, heat, moisture, and cold are destructive agents, those being the chief elements of the atmosphere, mildew could not therefore exist. If I correctly read Mr. Smith he here merely wished particularly to show that while floating in the air the spores are easily and quickly destroyed by either of these agents. He does say "there is no evidence to show that they can live more than a day or two at most." By this I infer he means the unattached spores, because he again says, "unless they light upon Roses or some allied plants they perish at once," and "that Nature has provided for this emergency by the constant and repeated production of vast numbers of fresh spores."

I beg Mr. Clayton to observe that I simply said "cold wet summers." What particular degrees of heat will cause the spores to vegetate, and on the other hand destroy them, I know not; but this I have frequently observed, that two or three days after a hailstorm in summer, or when a sudden depression of temperature has occurred, mildew is always more prevalent on Roses, and in low-lying sheltered damp positions they are much more liable to its attacks than in elevated and drier ones. His statistics of the weather do not strengthen his argument, and most certainly they do not refute what I have stated. I admit that the mean temperature of August last year was somewhat higher than that of July, also that the rainfall was less; but he again omits a very powerful factor in climatic conditions, one which is perhaps the most active and important in respect to the influence it exercises on the spores of mildew—viz., the humidity of the atmosphere. If he will again kindly refer to your meteorological records he will find that during the latter part of August and throughout September, the period in which he states mildew was "rampant," that the dew point was considerably lower than it was in July and the early part of August.

The mean atmospheric humidity during the three months was as follows:—July 74 per cent., August 68 per cent., September 81 per cent.; but if the six weeks ending September 30th be taken—that is the period when your correspondent says mildew was most rampant, the mean percentage of moisture was 78 per cent., while the rainfall during that period was 3 inches, and the mean temperature was reduced to 59°. But for our present purpose general statistics of the weather are perhaps more misleading than otherwise, because the climatic conditions which engender and encourage mildew are often very limited as regards space and of short duration; if, however, they are carefully considered locally they tend to throw a great deal of light on the growth and spread of this otherwise obscure disease. There is one point on which I quite agree with him when he says "it is always worst when hot sunny days are followed by heavy dews at night." This means that in the months of August and September Roses planted in low situations are frequently bathed for sixteen out of the twenty-four hours in an atmosphere saturated with moisture when the temperature of the dew point is often reduced nearly to freezing. These are the very conditions of the atmosphere which are most favourable to its increase, and such weather nearly always occurs in fine autumns after cold wet summers. If we could command these hot days without the excessively damp cold nights I do not think

we should have cause to complain of the ravages of mildew on Roses out of doors; on the other hand, we should have most probably to contend with even worse evils. We shall, therefore, do wisely to accept the bad with the good, and try to mitigate the lesser evil in the best manner possible. In support of my argument, I would again say, if Roses are cultivated in a damp, cold, ill-ventilated house mildew will spread rapidly; while in a dry warm one, where cold draughts are not allowed to enter, it will not appear. Lindley said, "These productions flourish in damp air at a low temperature, but will not exist either in dry cold air or in hot damp air."

Mr. Clayton says, "The difference between himself and me is very small." "He wants to grow Rose trees without mildew." This is indeed a good wish, and I hope he may have it gratified. In the meantime I will be content to try those preventives which experience has taught me not to despise; and when he has found "the method," the veritable "philosopher's stone," I trust he will quickly reveal it to his less fortunate friends. "We may find out more than we at present know about mildew," but as we cannot command the weather, I fear Mr. Clayton's wish will never be gratified. The preference which mildew appears to have for particular varieties of Roses is very plain to the most casual observer, and I have frequently noticed when endeavouring to discover the cause of this, that the varieties that are most liable to its attack are invariably those that are the most densely covered with thorns, and such as possess a rough exterior both in leaf and branch; while the more smooth-barked, and such as have a bright glossy exterior, appear to be least affected. Whether these thorny rough-barked varieties act more efficiently as natural traps to arrest the progress of the spores when floating about in the atmosphere, and so prevent their being so easily blown or washed off, as is the case in the smooth-barked varieties, I am not able to decide; but it is, I think, very probable, and much more likely to be so, than that there should exist any peculiar attraction or affinity between the spores and any particular kinds of Roses.—C. W.

ROYAL HORTICULTURAL SOCIETY.

FEBRUARY 10TH.

CYCLAMENS and Orchids formed the chief features at this meeting, both being especially well represented. The Cyclamens were remarkable for their excellent appearance, and the Orchids included some rare and beautiful species.

FRUIT COMMITTEE.—Present: Mr. F. D. Godman, in the chair; J. Lee, Arthur Sutton, Harry Veitch, J. Woodbridge, G. T. Miles, W. Paul, A. Howcroft, C. Ross, S. Lyon, G. Goldsmith, J. Willard, Harrison Weir, T. F. Rivers, F. Rutland, G. Paul, W. Denning, G. Bunyard, R. D. Blackmore.

Messrs. T. Rivers & Son, Sawbridgeworth, showed a collection of twenty-five dishes of home-grown Oranges, comprising excellent samples of the following—Egg (St. Michael's), Tangierine, Dulcissima, Maltese, Pernambuco, Mrs. Markam's, Maltese Blood, Nonpareil, Silver, Queen, Seville, Bittencourt, Dom Louise, White, Botetha, and the Sustain, together with the Taringo Shaddock, White Lemon, Bitter Lime, Bijou Lemon, and Sweet Lemon. This was a most interesting collection, and a silver medal was awarded for it. Messrs. H. Lane & Son, Berkhamstead, were awarded a bronze Banksian medal for about sixty dishes of Apples in splendid condition, solid, fresh, and bright in appearance. Very notable were the following—Dumelow's Seedling, Stone Apple, Warner's King, Cox's Orange Pippin, Waltham Abbey Seedling, Grand Duke, Round Winter Nonesuch, Golden Noble, Lady Henniker, Mère de Ménage, Lord Derby, English Codlin, Prince Albert, Belle Bonne, La Fameuse, King of the Pippins, Dutch Mignonne, Worcester Pearmain, and Northern Greening.

Messrs. G. Bunyard & Co., Maidstone, Kent, were awarded a bronze Banksian medal for over fifty dishes of Apples. All the fruits were in excellent condition, and particularly good were the following:—Beauty of Kent, Mère de Ménage, Winter Queening, Gloria Mundi, Annie Elizabeth, Wellington, Golden Noble, Stone's Apple, Cox's Pomona, Smart's Prince Arthur, Alfriston, Lord Derby, Ribston Pippin, Lady Henniker, and Cox's Orange Pippin.

A vote of thanks was accorded to Mr. Inglis, gardener to Earl Grey, Howick, Lesbury, for the following Cabbages:—Cook's Early, Early Rainham, Heartwell Marrow, and Reading All Heart, the last named being extremely good with a solid heart and much the best of the four. Mr. W. Bibby, Colchester, showed a white Celery called Bibby's Defiance, solid, white, fairly good, but not of special merit. Messrs. Hurst & Son, 152, Houndsditch, sent samples of a good curled Parsley. Mr. R. Gilbert showed several varieties of Cabbages, including Ellam's Dwarf and Gilbert's Select Improved, the latter with neat hearts. Mr. John Day, The Gardens, Galloway House, Garlieston, N.B., sent a dish of Galloway Pippin, which was described as being in season from November to May. "A good late culinary variety, free bearer and constant cropper."

First-class certificates were awarded for the following:—

Pear Duchesse de Bordeaux (Messrs. G. Bunyard & Co.).—A distinct variety, the fruits nearly globular, 2½ inches in diameter, densely covered with russet spots, the eye very small in a shallow depression, the stalk about 1 inch long, and obliquely inserted. It is a very good late variety, the fruits shown being very solid.

Orange Sustain (T. Rivers & Son).—Of moderate size, globular, dark in colour, very sweet and juicy.

FLORAL COMMITTEE.—Present: G. F. Wilson, Esq., in the chair; Dr. Maxwell T. Masters, J. T. D. Llewelyn, Harry Turner, W. Bealby, J. Walker, Amos Perry, H. Herbst, G. Henslow, J. James, Charles Noble, John Fraser, James Hudson, H. M. Pollett, H. Ballantine, John Dominy, Henry Cannell, G. Duffield, James O'Brien, A. Hill, J. Douglas, W. B. Kellock, Henry Williams, Thos. Baines, H. Bennett, John Laing, J. Child, and F. R. Kinghorn.

Orchids were very numerous shown, and added much interest to the meeting. Sir Trevor Lawrence, Bart, M.P., Burford Lodge, Dorking, contributed a group of choice Orchids, amongst which were the following:—*Odontoglossum Chestertonii*, very handsome pale yellow and white, with

brown spots and blotches. *Lælia anceps Williamsi*, which has very large pure white flowers, the lip being streaked with dark red. *Odontoglossum Wilckeanum* was also very attractive, with its yellow and brown-spotted flowers; *Cœlogyne flaccida*, with nearly twenty spikes; *Odontoglossum Oerstedtii majus*, with very large flowers; and *Lycaste Skinneri* varieties. A cultural commendation was awarded for a fine spathe of *Anthurium ferrierense*, which was about 6 inches long by the same in breadth, an unusually fine example. W. Lee, Esq., Downside, Leatherhead (gardener, Mr. Woodford), showed several notable Orchids, for which certificates were awarded. Of others not so honoured the following were noteworthy:—*Odontoglossum Sanderianum*, a pretty plant with yellow sepals and petals spotted with brown, and a white lip; *O. mirandum*, also a very distinct form, the sepals and petals narrow margined with yellow, the centre brown. G. N. Wyatt, Esq., Lake House, Cheltenham (gardener, Mr. Simcoe), contributed plants of the following:—*Cattleya chocoensis* bearing five flowers, the sepals, petals, and lip white, the latter being, however, stained with yellow and tipped with crimson; *Odontoglossum ramosissimum*, with two large panicles of its small but curious flowers, of which the sepals and petals are very markedly undulated, white with lilac spots. Spikes of distinct varieties of *Odontoglossum gloriosum* were also sent. A vote of thanks was accorded. A. H. Smee, Esq., The Grange, Wallington, Surrey (gardener, Mr. G. W. Cummins), exhibited a variety of *Oncidium concolor*, with lips 1½ inch in diameter, it was appropriately named *giganteum*; and a plant of *Odontoglossum membranaceum*, which had been grown out of doors for three months last year and housed in October. It had three spikes, one bearing nine flowers, and well merited the cultural commendation awarded for it. F. A. Philbrick, Esq., Q.C., Oldfield, Bickley (gardener, Mr. Heims), exhibited a plant of *Odontoglossum Oerstedtii majus*, with flowers much larger than the ordinary form, being 1½ inch in diameter from tip to tip of the petals, and 1½ inch from the base of the lip to the top of the upper sepal. The leaves and pseudo-bulbs are also considerably larger. *O. blandum* was represented by a remarkably beautiful variety, the sepals and petals cream colour with maroon dots, and the lip white with purple dots. A vote of thanks was accorded for this exhibit.

Four spikes of *Calanthe Veitchii* varieties were sent by Mr. W. Iggulden, Marston House Gardens, Frome, and Mr. W. Bennett, Rangemore Gardens, Burton-on-Trent. Two of them, one each from Rangemore and Marston, were identical, an ordinary form of *C. Veitchii* and a variety named *superba* being sent from Marston for comparison. It was considered that they are all seedling variations, and it was stated that there is a form of *C. Veitchii superba* superior to that sent by Mr. Iggulden.

Mr. B. S. Williams, Upper Holloway, sent several Orchids, of which the following were noteworthy:—*Odontoglossum hystrix magnificum*, with large blooms of a rich brown colour, with a few yellow markings in the petals and the lip. *Odontoglossum maculatum Donianum* is a fine variety, the lip being curiously marbled with brown. *Odontoglossum facetum* is attractive and extremely rare; the lip is like that of a small *O. hystrix*, the sepals, petals, and lip being barred with pale yellow and brown.

Mr. William Bull, King's Road, Chelsea, was awarded a silver Banksian medal for a beautiful collection of new plants, comprising several of especial merit. Very notable were the following:—*Cœlogyne cristata Lemoniana*, with two good spikes of flowers, the lip tinted in the centre with pale yellow. *Hæmanthus Kalbreyeri*, with dark red flowers, very showy; *Odontoglossum Halli leucoglossum*, with a white lip; a fine white variety of *Odontoglossum Alexandræ*; *O. gloriosum pictum*, with large superbly marked blooms; *Cattleya Trianae Empress*, with mauve sepals and petals and a rich crimson lip; *Imperator*, with fine flowers, the lip of great size and bright rose tyrianthina, with white sepals, petals, and crimson lip; and *Princeps Odontoglossum Pescatorei melanoleuca*, a peculiar variety with white sepals and petals, the lip and column being dark purple at the base; *O. Pescatorei aurantiaca* is similarly stained with orange at the base of lip. Several good Palms were also included in the group. Messrs. J. Veitch & Sons were awarded a vote of thanks for plants of the old *Linum trigynum*, well grown and profusely flowered.

Messrs. H. Cannell & Sons, Swanley, were adjudged a bronze Banksian medal for a fine group of Primulas and Cyclamens. A dozen plants of the double white Primula were shown, the specimens being remarkable in size and number of flowers. They were fully 18 inches in diameter, and each bore hundreds of flowers. Two dozen plants of the Swanley Blue Primula were also shown, and were notable for the large size of the flowers and deep lavender blue colour, much better than they have hitherto been seen. Some fine Cyclamens were also shown from Swanley, and votes of thanks were accorded for these excellent groups. Messrs. T. Todman & Son, Rose Park Nursery, Upper Tooting, showed several of his hybrid Azaleas. Mrs. T. Todman, pure white; *Patience*, bright red; and *Edith Todman*, double, pale rose, was very pretty. Mr. W. M. Crowe, Upton, Essex, exhibited a plant of *Begonia semperflorens gigantea rosea*, a variety of French origin, with small but bright rose-coloured flowers. Mr. J. H. Potts, Welcomb Gardens, Stratford-on-Avon, sent a pretty double Primula with large bluish-tinted flowers, very full, and of good form. Mr. J. King, Rowsham, Aylesbury, showed several distinct and meritorious Primulas, of which the most noticeable were the purple, pink, and a white-edged variety named *Mary Anderson*. Mr. J. James, Farnham Royal, Slough, had a box of *Cineraria* and *Primula* blooms, including some fine varieties, especially amongst the former a white variety, with a purple centre, having blooms over 3 inches in diameter. Mr. W. B. Hartland, 24, Patrick Street, Cork, sent two double Daffodils named *Rip Van Winkle* and *General Gordon*, in which the crown was cut into narrow fragments to the base. One was considered to be the true wild double *Narcissus Pseudo-Narcissus*.

A remarkable group of Cyclamens was shown by Mr. H. B. Smith, Ealing, upwards of 200 Cyclamens in 48-size pots being staged, the size and number of their flowers being unusually good. They were most variously tinted, and the plants were sixteen months old, indicating the best treatment. A silver-gilt Banksian medal was awarded for this excellent group. Mr. Clarke, Twickenham, was awarded a silver Banksian medal for a similar collection of 150 Cyclamens, chiefly remarkable for the rich and bright colours which predominated. W. Clay, Esq., Grove Road, Kingston (gardener, Mr. J. Wiggins), contributed about 200 Cyclamens in 48-pots, all the plants being in admirable condition and most creditable to their grower. A bronze Banksian medal was awarded. A similar award was granted to Messrs. J. Veitch & Sons, Chelsea, for a group of about 100 well-grown

Cyclamens, comprising a number of distinct and handsome forms, the flowers large, and the general habit of the plants most satisfactory.

First class certificates were awarded for the following plants :—

Acineta chrysantha (Sir Trevor Lawrence, Bart.).—A very distinct Orchid with a drooping spike of thirteen flowers, produced from the lower part of the plant and forced through the base of the basket. The flowers are yellow dotted with red on the inner surface, somewhat in the way of *Acineta Barkeri*.

Cattleya Trianae Massangeana (Sir Trevor Lawrence, Bart.).—Very distinct; the sepals and petals pale mauve streaked with purple, the lip being tipped with rich crimson.

Dendrobium heterocarpum album.—A variety of this well-known fragrant Dendrobe, which has the sepals and petals pure white, the lip being stained with yellow in the throat.

Lælia anceps Hillii (Sir Trevor Lawrence, Bart.).—A superb plant with over thirty spikes, growing upon a raft about a yard square and in splendid health. The sepals and petals are white, the lip being slightly tinted with pale purple. We believe this plant was purchased for 100 guineas.

Odontoglossum hystrix magnificum (B. S. Williams).—Very handsome, 3 inches in diameter; sepals dark brown tipped with yellow; petals of similar colour, with yellow tips and markings; the lip brown at the base, upper half yellow.

Odontoglossum Hrubyannum (W. Lee, Esq.).—A beautiful species, the flowers much like *O. cirrhosum* in form, but pure white, the base of the lip yellow, with parallel linear marks of red.

Saccolabium bellinum (W. Lee, Esq.).—A most interesting and pretty Orchid, which had a spike of three flowers, the sepals and petals yellowish green with round dark red spots; the lip curiously cupped at the base, white with crimson spots, the apex expanding into a flattened portion covered with small white filaments, the centre being yellow with purple dots.

Nepenthes cincta (J. Veitch).—A magnificent Pitcher Plant, raised from seeds imported amongst seeds of *N. Northiana*, but it is believed to be a natural hybrid between that species and *N. albo-marginata*, which were found growing together in Borneo. The leaves are 18 inches to 2 feet long, the pitchers being 10 inches in length, about 2½ inches in diameter, with a narrow deep red rim, the general colour being a dull red, with numerous long spots and blotches of a darker shade. The plant shown had nine fine pitchers.

Rhododendron militare (Veitch).—A grand hybrid, with brilliant scarlet flowers, the lobes rounded, and the heads had about twenty flowers each.

Vriesia janeirensis variegata (W. Bull.).—A remarkable plant of the Bromeliaceous family, with leaves 18 inches long and 3 inches broad, bright green striped in the centre with irregular bands of white from base to apex.

Primula White Perfection (H. Cannell & Sons).—A magnificent single variety, with blooms 2½ inches in diameter. It is pure white, of great substance, and very beautiful.

ORCHID CONFERENCE, 1885.

THE Council of the Royal Horticultural Society invite the attention of the Fellows, and of the cultivators of Orchids generally, to the Conference on Orchids, which it is proposed to hold in the conservatory on May 12th and 13th, at which the President, Sir Trevor Lawrence, Bart., M.P., will preside. The cultivation and popularity of Orchids have extended rapidly of late years, owing to the singular beauty and variety of their flowers, the large and frequent importations, and the introduction, or the raising by hybridisation, of rare and beautiful novelties. The Council hope to assemble at the proposed Conference a thoroughly representative exhibition of Orchids, embracing plants in flower and in seed, and cut flowers, and illustrating the results obtained by hybridisation, the modes of growth, the methods of cultivation, and the appliances and soil used.

Several of the chief growers, amateur and professional, have already promised their support. Fellows of the Society, and cultivators of Orchids generally, are invited to contribute to the Conference, so that the exhibition may be as varied and interesting as possible. In all cases, where practicable, the following information should be given—viz., 1, name; 2, native country, if imported; 3, parentage, if a hybrid.

The plants will be staged in the conservatory, where the atmosphere will be especially attended to, so as to ensure in all respects the well-being of the plants.

Staging must be completed by 11 o'clock A.M., and all exhibits may be removed after 6 o'clock, P.M., on the second day.

Tuesday, the 12th, the ordinary meeting day of the Committees, will be devoted to a general examination of the various subjects presented. The doors will be open at 12 noon.

On Wednesday, the 13th, the Conference will meet in the conservatory for the reading of papers and discussion, the chair being taken by the President at 10.30 A.M. precisely.

Notice of intention to exhibit, with amount of space required, must be sent to Mr. Barron, Royal Horticultural Society, South Kensington, on or before Friday, the 8th instant.

ESPECIALLY TEAS.

YES! especially Teas! well may "Theta" write, and yet in spite of "Theta's" very amusing protest I am afraid the framers of schedules will not listen, even if they hear. The fact is, let the exhibition be what it may, the schedule is almost certain to contain anomalies and eccentricities. Perfection is unearthly, that must not be forgotten; still it does seem, particularly to admirers of certain varieties, that schedule framers purposely go out of their way to give their favourites the snub. Very many years ago I worked this matter in reference to poultry and pigeons, where the subject is of more importance, seeing that each exhibit necessitates a

certain entry fee, this latter being especially heavy, whether the first prize be a £5 silver cup or a modest 30s. prize. The anomaly here is certainly much harder, and it is manifestly unfair. Being out of it now, I cannot say whether schedule framers in poultry exhibitions have learnt what I fancied, perhaps erroneously, was wisdom, but I have often proved by subsequent analysis of the entries how uncertain entries in different classes may be, and how impossible it is to tell beforehand which variety would prove most remunerative.

Horticultural schedules are, however, very different. Mostly there is no entrance fee, or a comparatively small one that covers all the classes. Exhibitors of less favoured varieties have not, therefore, great cause of complaint, even though there may be eccentricities. Whatever may have been the cause of some judges acting on the principle of extra points for a good Tea bloom—it certainly was followed by some, notably, I think the late Mr. Keynes, one of the best judges of the Rose, and a splendid grower of Tea varieties—the plan never appeared to me a fair performance, and the decision of the National Rose Society discountenancing such preference was wise. It seems to me, however, that this method of dealing with Tea blooms was in vogue long before the advent of the National Rose Society.

It has possibly dawned on Rose-growers, especially amateurs, that Tea Roses have not the delicate constitution that report had given them. I fancy that budding on the Manetti had something to do with this character; at least, in my experience, Teas do not like the Manetti as a foster-parent, and the union is not often of much permanent value. This is only a surmise, but the value of the Manetti on some soils with the Hybrid Perpetuals doubtless tended to the idea that it might be equally advantageous for Teas, an idea that I fancy proved delusive. Perhaps I am rash in suggesting that the character for debility of constitution in Teas has only been proved mistaken since the introduction of the seedling Briar as a stock. Certainly, in my experience, which is limited and may be erroneous, it is on this stock that these lovely blossoms have arrived at the greatest perfection and developed greater power of constitution. Doubtless on Briar cuttings they succeed equally well, and certainly with some on the old Briar standard, unsightly though it be. Still, all these seem to say that the Briar is the proper Tea stock for successful exhibiting.

The seedling Briar in its freedom from suckers hears away the palm with myself, and I cannot help thinking that its influence on the encouragement of Tea Rose culture has been great. Schedule framers are apt to go on in the old routine, very difficult to get out of the groove; and as some few years back it is certain that the exhibitors of Tea Roses were fewer in number as the growers also were, so it is possible that by them the schedule suited to 1875 may still be considered adapted to a decade later. Let us hope that "Theta's" protest may assist in enlightening them.

In justice, however, to schedule framers, it must be allowed that the Tea exhibitors have been far less numerous, even though a smaller number of blooms (insult to injury, says "Theta") have been asked for. Has the result not unfrequently been to the exhibitors all prizes and no thanks? Years ago, about Christmas, I recollect meeting a small boy, the son of a friend of mine. With great glee he told me he had got a prize. After duly commending him for his exertions, I inquired if it were a first prize. "Oh, no," he replied; "second." "And how many hoys in the class?" was my next question. "Oh, only two," the reply. Is not this something like the experience of Tea exhibitors, say as late as in 1881? I think it was my own experience at a large Rose exhibition in that year where I had the impudence to stage six Teas. There were three prizes and three exhibitors. The only difference between my young friend's success and my own was that I took the first. I think in the twelves there were five entries. In justice to the schedule framers of that exhibition I must state that the six Teas had "a hit of gold" for their reward, or rather hits.

Possibly, too, there is yet another reason beyond the paucity of growers for the lack of exhibitors in the Tea classes. When, for instance, in classes of seventy-two varieties for the coveted premium possibly of the exhibition, the exhibitors, not being restricted to H.P.'s, naturally insert their best blooms of Teas in their seventy-twos, or in the case of amateurs in their forty-eights. This is natural, for the addition of the Tea element, especially when by superiority of culture they are equal in character to their hardier (query) relatives, is of immense importance in giving variety both of form and colour to the stand, and variety should certainly count for some points in such a contest.

Beautiful as are the Tea varieties, yet as they are at present there would be a great sameness of colour in a stand of "Theta's" suggested forty-eight varieties. It is perfectly true that we are coming to variations in colour, but they are not yet widely distributed, excepting perhaps Madame Lambard, a great acquisition, and one of immense value. I cannot help trusting that exhibitions in 1885 will prove that the growers of these beautiful varieties of our national flower have largely increased, and I feel confident that if this should be the case the National Rose Society will set the example both of increased numbers of Teas in a stand as of augmentation of prizes for the same; but in considering the possibility of the former, it must, I think, be borne in mind that, other things being equal, a given H.P. will probably give more exhibition blooms than a Tea. (Don't annihilate me, "Theta.") I fear it is true. As a counterpoise to this wicked suggestion of mine, I express my surprise that "Theta" in commenting on their value has left unnoticed one of the most brilliant qualities of the Tea. Whichever saw a Hybrid Perpetual of the darker varieties fit to place in a stand after exposure to one day's exhibition? Yet many blooms of Teas will pass through the ordeal

unscathed, and not only live to fight another day, but to fight and conquer. In staying capabilities they wondrously surpass the Hybrid Perpetuals, and thus, this quality, added to their loveliness of outline, helps to repay the extra attention which it must be allowed they require, and, let me add, they warmly deserve. Yes, grow Roses by all means, "especially Teas."—Y. B. A. Z.

I AM inclined to suspect that "Theta" is one who cultivates one class of Rose only—viz., Teas, and no doubt they are the best. I would not be without them for a great deal.

But if there is a Rose-grower who confines himself solely to Hybrid Perpetuals has he not a far greater cause of complaint than the man who confines himself to Teas? I think so, and for this reason, on looking through the schedules of eight of the principal Shows of 1884—viz., Crystal Palace, Bath, South Kensington, Salisbury, Manchester, Liverpool (Wirral), Darlington, and Ipswich, I find there is not one prize offered for varieties of Hybrid Perpetuals except the one-variety classes, although there are many prizes for varieties of Teas. Surely the grievance, if any, is with the H.P. grower and not the Tea man.

Will "Theta" point out the society that offers in proportion double the sum for H.P.'s only than for Teas and Noisettes only?

Personally I admire the classes for Teas only, and am glad to learn that there will be a class for twelve trebles at South Kensington this year. But the backbone of a show has to be considered in arranging the schedule, and this backbone consists of forty-eight, thirty-six, twenty-four, and twelve varieties, not of one kind of Rose, but of any and all kinds—Hybrid Perpetuals, Teas, Noisettes, &c.—J. H. P.



AT the annual general meeting of the ROYAL HORTICULTURAL SOCIETY, held last Tuesday, Sir Trevor Lawrence, Bart, M.P., in the chair, the following candidates were elected Fellows—viz., George S. Addison, Miss E. M. Bott, Richard S. Cosh, Sydney Courtauld, H. J. Davis, Lady Howard de Malden, Joseph Ellam, Miss S. M. Entwisle, Lieut.-Gen. W. J. Gray, R. A.; Thomas Griffiths, G. H. Jupp, J. G. Kitchingman, Mrs. Lee, Geo. Meakin, J. C. Mundell, Myles Patterson, Charles H. Payne, J. C. Schleicher, W. J. Smith, Mrs. C. Swanston, John Syer, Rev. Arthur Veysey, Ernest Wood.

— MR. J. REID sends the following note upon MRS. PINCE GRAPE :— "This requires to be kept in a low temperature when fully ripe, also to be shaded from the sun to preserve the quality and colour of the fruit. Shading might effectually be done by placing pieces of brown paper above the wires of the trellis. No water should be spilt on the paths, or the fruit is sure to get bad and is likely to drop from the stalks. The top ventilators should be constantly open night and day. The temperature should be kept at 40°, as the above-named Grape will grow better at that heat than higher, if the sun be entirely excluded. I have no faith in syringing Vines when in flower to assist in setting the fruit."

— SUBJECT to approval of general meeting, the BROCKHAM ROSE ASSOCIATION Committee have accepted the invitation of Sir Trevor Lawrence, Bart., M.P., to hold their show at Burford Lodge on Saturday, June 27th, 1885.

— MR. HENRY H. WILLIAMS writes :—"I should feel greatly obliged if you, or any of your correspondents, could give me the results of growing MUSHROOMS ON COW MANURE. I have a large quantity of cow manure, and would like, if possible, to use it for Mushroom-growing. I have carefully read Mr. Wright's excellent book on Mushrooms, but cannot find anything that quite bears on this point."

— A NOVEL METHOD OF MUSHROOM-GROWING.—A correspondent writes :—"In your last issue, in 'Historical Jottings on Vegetables,' I notice it was a common practice to perforate the shelves. When they were of wood they were usually narrow; hence it often happened that a crop was obtained from both sides of the shelf. On a recent visit to Sudbrooke Holme, Lincoln, I saw a better plan adopted. The beds are about 4 feet wide. The wood for the bottom of the bed was cut the same length, and 3 inches wide, and fitted about the same distance asunder. Some of the straw shaken from the droppings was then laid on and the bed made up in the usual way, the spawn being inserted on the top and on the under side between the strips of board. The produce is good and lasting, scores of fine Mushrooms being seen upside down. Mr. G. Gray,

the gardener, has a capital house to grow them in, but as he is obliged to utilise the lower part for Seakale, Rhubarb, &c., he has only two beds devoted to Mushrooms, but from the four surfaces he is able to meet the demand. Those who possess larger houses and more room are not likely to try the experiment, but others with only limited space I would advise to give it a trial. The returns will be nearly double the crop from the same amount of material."

— "G. W. C." writes :—"At SUDBROOK HOLME, LINCOLN, the seat of C. C. Sibthorpe, Esq., the conservatory has the appearance of a vinery with strong-growing Fuchsias, pruned back and trained over the roof. The varieties are Beaton, La Neige, Lustre, Champion of the World, and Paris-Murcie, and in the summer time must be very pretty. Other inmates useful for winter bloom are Clematis indivisa lobata, C. Duchess of Edinburgh, Cyclamens, Cinerarias, single and double Primulas. The variety with red leaves and white flowers is grown largely about there. I believe it was raised by Mr. W. Wright when at Branston Hall, Lincoln. There is also a fine plant of Phormium Veitchii variegata with thirty leaves. Orchids, Ferns, stove and greenhouse plants are well represented."

— AT the ordinary meeting of the ROYAL METEOROLOGICAL SOCIETY, to be held at 25, Great George Street, Westminster, on Wednesday, the 18th instant, at 7 P.M., the following papers will be read :—"How to Detect the Anomalies in the Annual Range of Temperature," by Dr. C. H. D. Buys Ballot, Hon. Mem. R. Met. Soc. "Cloud Observing," by D. Wilson Barker, F.R. Met. Soc. "A Suggestion for the Improvement of Solar Radiation Thermometers," by William F. Stanley, F.R. Met. Soc., F.G.S. The papers will be in type before the meeting. Any Fellow wishing to take part in the discussion can obtain a copy on application to the Assistant-Secretary.

— MR. G. W. CUMMINS sends the following respecting the HARDINESS OF THE GARDENIA :—"After the decease of the late William Terry, Esq., Peterborough House, Fulham, the Orchids and stove plants were sold. The Gardenias planted out in a border in the stove remained unsold, and although the house has only had fire heat on two occasions since the middle of August, the plants at the present time have a remarkably healthy appearance, and are well set with flower buds. The foliage is very bright and dark green. There has been sufficient frost in the house to burst the leaden air pipes, while the plants remained uninjured. The foliage and the roots have been kept dry. Some other Gardenias growing in pots in the same house have been watered in the usual manner, and they have all been injured by the frost. This establishment, once noted for the collection of Orchids, is now broken up, and Mr. Watterson, who has proved himself an efficient gardener, will have to seek a home elsewhere."

— BUTLERS v. GARDENERS.—"A. F. M." writes :—"As an occasional correspondent, may I draw the attention of your readers to a part of your last issue they may perhaps have overlooked? I allude to your answer to 'H. C. M.' 'Table Decorations—Butlers v. Gardeners' in your answers to correspondents. It seems to me the most sound and sensible advice to head gardeners that I have ever seen in your columns, and I hope it will be marked, learned, and digested by many."

— THE following GARDENING APPOINTMENTS have been made through Messrs. John Laing & Co., Forest Hill, London, S.E. :—Mr. P. Bogie, lately head gardener at the C atel, Guernsey, as head gardener to F. J. Clarke, Esq., Bracebridge Hall, near Lincoln. Mr. R. Revell as head gardener to George Vulliamy, Esq., Greenhithe, Kent. Mr. T. Crosswell, late foreman at Hollenden, Tonbridge, has been appointed head gardener to Lady Forester, Meaford, Stone.

— "LARGEST TREE IN THE WORLD."—"Old Moses" is the name of what is thought to be the largest tree in the world. It stands in a grove near Tule River in California. Although the top is broken off, it is 240 feet high and 12 feet in diameter at the broken part. The hollow of the trunk will hold 150 persons, and is hung with scenes of California, is carpeted and fitted up like a drawing-room, with tables, chairs, and a pianoforte.

— THE WOODS OF CASTLE KENNEDY.—Chronicling the deaths of one of the Earls of Stair, the *Dumfries Courier* in June, 1821, gave a brief description of Castle Kennedy, stating a fact which does not appear to be generally known—namely, that all the woods on this estate are planted in lines, columns, and battalions, and intended to represent the movements, or rather the positions of armed men. The scenery of th

ancient seat was originally formed under the direction of the "Great Earl of Stair," whose military habits and exploits may account for the peculiarity of his taste in planting, and who in other respects followed the Dutch or Flemish plan of laying out his pleasure grounds.

— THE following SUMMARY OF METEOROLOGICAL OBSERVATIONS AT HODSOCK PRIORY, WORKSOP, NOTTS, JANUARY, 1885, has been supplied by MR. JOSEPH MALLENDER:—Mean temperature of month, 36.1°; minimum on the 22nd, 18.6°; minimum on the grass on the 22nd, 15.0°; maximum on the 29th, 53.8°; maximum in sun on the 14th, 76.4°. Warmest day the 29th, mean temperature, 49.6°; coldest day, the 22nd, mean temperature, 25.9°. Mean temperature of air at 9 A.M., 35.6°. Mean temperature of soil 1 foot deep, 37.0°. Nights below 32° in shade, nineteen; on grass, twenty. Total duration of sunshine in the month, 14.4 hours, or 6 per cent. of possible duration, the brightest the 14th. We had twenty-three sunless days. Total rainfall, 1.42 inch. Maximum fall in twenty-four hours on the 10th, when 0.22 inch fell. Rain fell on twenty-three days. Wind mostly from south to westerly points. Of sixty-two observations, thirteen were calms. The month has been chiefly marked by the number of alternations between frost and thaws; the frost was never very severe nor of long duration. The mean temperature is lower than the last three years, and as much as 7° lower than last year. Sunshine much less than in any of the previous four years. Rainfall less than the last three years.

CALANTHE VEITCHII.

THE remarkably good illustration of *C. Veitchii*, Rangemore variety, on page 113, will perhaps have the effect of discovering plants of it in various parts of the country. At any rate, we have a stock of it, and fortunately have two spikes of bloom still left. One of these I send you. Our bulbs are scarcely so strong as those of the better known varieties of *C. Veitchii*, as they only range from 6 to 8 inches in length; whereas the others are from 9 to 12 inches long. The spike, too, is shorter and more erect, the longest being 2 feet and others about 18 inches in length. From the first I have thought highly of it, and it is a favourite for making into bouquets for ladies to wear. I also send a spike each of *C. Veitchii* and *C. Veitchii superba*, principally to demonstrate the marked superiority of the latter. Besides being of a better colour the flowers are produced more freely, or rather much closer together.—W. IGGULDEN.

[The variety sent by Mr. Iggulden is very similar to that from Rangemore, differing only in the deeper colour of the lip, though this may be merely owing to cultural differences. In the form of the flower and the compactness of the spike it is precisely the same as that figured last week. *C. Veitchii superba*, which accompanies this and the ordinary type, is much darker in colour than either of them, and forms a large handsome spike.]

SCONE PALACE:

AS an old Scone man I read with much interest Mr. Castle's notes at page 90 on this historical Scottish baronial residence and its gardens. These gardens, in a gardener's point of view, are somewhat famous by reason of the brothers Fish (the late Robert and David) and Douglas of Conifer renown having commenced their gardening careers in them. An interesting feature is the remarkably fine specimen trees of the Merello Cherry which embellish the high walls enclosing the kitchen gardens there, especially those trained at the north side of the wall dividing the "top" kitchen garden from the pinetum. At the back of this is situate the famous curvilinear-roofed Peach house, consisting of iron and bent glass, which, I believe, was built from a "walking-stick and ground walk sketch" by the late gardener, Mr. John Halliday, for the Earl of Mansfield, as illustrating his description of the then proposed new Peach house. I have never before nor since seen such splendid results secured from Peach and Nectarine trees in 14-inch pots as from those in this house. About 250 were grown, and when they had shed their leaves every year they were turned out of the pots, the soil, with the assistance of pointed sticks, removed from the roots; the latter shortened a little, and then repotted firmly in a compost consisting of rather more than three parts of fibry loam and nearly one of lime rubble and charcoal. The pots were afterwards plunged below the rim, and then watered to settle the soil about the roots. The chief pruning of these trees was performed with the finger and thumb during the spring and summer months by following a judicious course of disbudding and pinching of the shoots. Before the trees flowered in the spring (the house is a cold one) the pots were taken up, the holes half filled with soil, over which a couple of bricks were placed a couple of inches apart, so as to secure a free passage for the water through the well-drained pots, which were placed thereon and the soil afterwards levelled round them. Soon after the trees had set their fruits a couple of narrow strips of turves were placed round, and a couple of inches above the rim of the individual pots so as to form a sort of basin, which was partly filled with sheep droppings, the virtue of which each successive watering, which was frequent and copious, washed to the roots. Air is admitted simultaneously back and front by leverage fixed in the centre of the house, which in shape may be said to represent the fourth part of an elliptical figure, and the pathway consists of an ornamental

grating set in a wooden frame. After the fruit had stoned it was nothing new for the temperature of this house to rise to 120°, with abundance of atmospheric moisture at closing time on bright afternoons, Mr. Halliday being of opinion that so long as the trees were kept clean and vigorous no evil result need be apprehended from subjecting the trees to such a high temperature; and that he had good grounds for giving such opinion the splendid crops which he secured from the trees in this house amply demonstrated. I know that the syringing of these trees every bright afternoon, especially after the fruit had stoned, took a man the best part of an hour with a Paxton garden engine to thoroughly wash every leaf and branch.

I may be allowed to say that one of the best bothies in the country is provided for the young gardeners at Scone. Would that a good many of the tumble-down ones in the country were replaced by such a model residence, which does credit to the place and its noble owner.—H. W. W.

NERINE FOTHERGILLI MAJOR.

THE Guernsey Lilies are charming plants for a cool house, and they are far too seldom grown for decorative purposes in such structures. Some plant lovers have, however, discovered their value and appreciate them accordingly, for they can be employed with excellent effect amongst ordinary fine-foliage plants, Ferns, and plants with less brilliant flowers. An excellent example of what can be done with these plants for such purposes was afforded by Mr. J. Roberts of Gunnersbury Park Gardens at the Ealing Chrysanthemum Show last November, where he formed a bank of miscellaneous white and light-flowered plants and Ferns with *Nerine sarniensis* and *N. Fothergilli* peeping from amongst them, and imparting a remarkable brilliancy of colour to the group. At that noted home for Orchids, The Dell, Egham, Baron Schröder has a number of fine specimens which are employed with excellent effect in the cool houses amongst *Odontoglossums* and similar Orchids, and at the equally famed Orchid establishment in the north, Fernfield, Bridge of Allan, Dr. A. Paterson produces charming effects in his *Odontoglossum* houses by employing these plants freely. So much are they admired that he has considered them worthy of careful culture, and the result is that scapes of unusual size are frequently produced. One of these is faithfully depicted in the woodcut, fig. 23, and will convey some idea of what can be effected by liberal treatment. An important point is to avoid frequent repottings, and it is preferable to allow plants to remain several years in a pot, supplying what nutriment they need in the form of liquid manure, than to turn them out every season, for this generally leads to failure. A good turfy loam, not too heavy, with a fair proportion of sand and thorough drainage, are all the essentials in its cultivation; the coolest position, where frost can be excluded, suiting it at all seasons, and one frequent cause of failure with this and other *Nerines* has been growing it in too high a temperature.

The flowers are a brilliant scarlet, much superior to *N. sarniensis* and more like *N. corusca*, but surpassing that species in size, though this when well grown is a handsome plant. Another attractive species is *N. rosea*, with large bright rosy flowers, while as a delicate diminutive beauty the exquisite little *N. filifolia* should by all means be grown.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY.

THE nineteenth annual meeting of this very useful and prosperous Society was held on Monday evening last in a private room of the Caledonian Hotel, Adelphi Terrace, London. Mr. Richard Dean, one of the Honorary members of the Society, presided with his usual ability, and the large numbers of members present evinced great interest in the proceedings. After the minutes of the last meeting were passed and duly signed by the Chairman, the Secretary, Mr. McElroy, was called upon to read the financial report of 1884. It may, perhaps, be well to remind those who are interested in the affairs of the Society that there are three separate funds—the Benefit Fund, the Benevolent Fund, and the Management Fund. The contributions to the Benefit Fund are 2s. per month, to the Benevolent Fund 2s. a year, with 2s. 6d. a year to the Management Fund. The amount of sick pay from the first-named fund is 1s. 6d. per day, with the privilege of increasing the amount to 16s. per week on the payment of 1s. a month extra. Contributions cease when members attain the age of seventy years, and they are then provided for out of the Benevolent Fund. The Committee are further empowered from time to time to make grants to sick members from this Fund in addition to the weekly amounts they receive from the Benefit Fund, such grants being determined by the necessities of each case—such as the pressure of heavy doctors' bills, or to mitigate any calamity that may occur. No moneys from either of those funds can be applied to the management of the affairs of the Society, the special annual subscription of 2s. 6d. per member meeting all claims, and any little surplus that remains is handed to the Secretary as a small recognition of his valuable services. The surplus on the present occasion was £3 18s. 7d., and as the total fund was £24 14s. 10d., it follows that the entire cost of management, including the printing of 500 books of rules and as many balance-sheets, with rent, postage, stationery, &c., was only £20 16s. 3d. for a Society numbering 163 members ample evidence that the management is good.

The Benefit Fund has increased from £109 7s. 7½d. to £1986 2s. 7½d.

during the past year, an increase of £318 15s. The disbursements are heavier than usual, yet are trifling in comparison with the income. £23 2s. 6d. have been expended in sick pay to seven members, with the addition of £28 1s. 4½d. as the deposit amounts of two deceased members and

older member received £26 16s. 3¾d. as the accumulated amount of his father. The lesson derivable from this is that persons should join as young as possible and keep up their payments. The probability is that every farthing they pay will be invested for them, and they insure against



Fig. 23.—*Nerine Fothergill major*.

paid to their nominees. This brings out a great and important feature of this Society, and one probably unique in its way. Not only do the members enjoy the ordinary benefits of friendly societies, but the surplus is placed to the separate account of each member and invested for him. A member on attaining the age of seventy can draw his accumulations, but on his death at any time the sum due to him is promptly paid to his representative. Thus the widow of a very young member was paid £1 5s. 1d., while the son of an

sickness for nothing. The above figures prove this, but they are by no means all, for £3000 are invested in Government consols, the interest on which exceeds £80 a year—a much greater sum than the liabilities of the very "heavy" year. It only remains to add that the Benevolent Fund has increased from £909 11s. 0½d. during the year to £992 15s. 10½d., and the highly satisfactory state of the finances of the Society will be admitted.

Mr. Dean, in moving the adoption of the report, had a most pleasant

duty to discharge. He complimented the Secretary on the clear and admirable way in which the books were kept, and warmly congratulated the members on the exceedingly flourishing state of a Society that was doing more and more good every year and increasing in numbers and wealth. He was convinced that its advantages only required to be generally known to command a wider constituency and secure a still greater accretion of members, and he urged on each to make himself a local missionary for the accomplishment of so good an object—provision against sickness and safety in investing hard-earned savings, and he further trusted the press would assist in this laudable work.

The re-election of Messrs. Burgis, Collins, and Rapley as committeemen with the election of Mr. Kendal, and sundry votes of thanks to the officers, brought the proceedings of a thoroughly businesslike meeting to a close.

It may be stated that thirty-five persons joined the Society in 1884, and during the past two years the members have nearly doubled in number, while cautious individuals are undergoing the process of "making up their minds" to join, and it is not likely they will gain by waiting. The funds of the Society now average £19 for each member, and this on the payment of an annual sum of £1 10s. 6d. shows perhaps as cogently as anything can show the prosperity and stability of the United Horticultural Benefit and Provident Society. Rules, with any further information that may be needed by gardeners from eighteen to forty-five years of age, can be had from Mr. J. F. McElroy, The Gardens, Moray Lodge, Campden Hill, Kensington, London, W.

CHRYSANTHEMUM GOSSIP FROM FRANCE.

As the result of the exhibition of Chrysanthemums at Chalons in November last the Horticultural Society of that town have elected a Special Committee to organise an international ballot in favour of the Chrysanthemum. Seeing how popular this flower is in England, and that a similar thing was done here a year or two ago, it will be extremely interesting to English exhibitors to learn the names of those flowers which are considered the best in a country to whom we owe the raising of some of our finest varieties, and where the Chrysanthemum is, judging from all we can learn, as much appreciated as in this country.

The rules accompanying the voting paper are few but concise. Not more than fifty varieties are to be named. They will be examined by the Committee, and the results published immediately afterwards. Any paper containing the names of more than fifty varieties will be rejected.

There are many Chrysanthemums in cultivation in France the merits of which are but little known to English growers, and it seems highly probable that the fifty varieties elected will differ considerably from those which appeared in the published list of the English election.

A French Chrysanthemum grower of some note is about to add to the very limited literature of the Chrysanthemum by the publication of a work on this charming flower. There has, strange to say, been nothing worthy of mention hitherto mentioned in France. It is to be hoped that the book will be in the hands of the public before long, but I fear it will not be ready for publication till the end of the year.

It is reported that M. Marrouh, the raiser of Mme. Clémence Audiguer and most of the new Japanese Anemones, is dead, and that his stock has passed into the hands of the prominent French raisers.

I may observe that the determination of the National Chrysanthemum Society to offer medals for Chrysanthemums is not the first case of the kind. The Horticultural Society of Chalons awarded two (one a silver medal and the other a bronze one) at their last exhibition to an eminent French raiser for his exhibits.

Most growers of Chrysanthemums have experienced the feeling of intense interest that takes possession of one after a few seasons. It is commonly known as "the fever" among the growers of my acquaintance. But after an experience of several complaints such as bibliomania, timbromania, &c., I venture to suggest that one might very reasonably define the constantly increasing enthusiasm for the queen of the autumn flowers as "Chrysanthomania."—LAMBETH AMATEUR.

ROYAL HORTICULTURAL SOCIETY.

FEBRUARY 10TH.

THE annual general meeting of this Society was held in the conservatory at South Kensington on Tuesday the 10th inst., a number of Fellows being present in addition to the following members of the Council:—Sir Trevor Lawrence, Bart., M.P., presiding; W. Lee, Esq., Dr. R. Hogg, G. F. Wilson, Esq., E. G. Loder, Esq., Professor Michael Foster, W. Haughton, Esq. (Treasurer), and Major F. Mason (Secretary).

Sir Trevor Lawrence took the chair at 3 P.M., and the proceedings were commenced by the Secretary reading the announcement calling the meeting, and the minutes of the last general annual meeting, which were formally adopted. A number of Fellows were elected, Dr. M. T. Masters and Mr. J. Douglas being then appointed scrutineers of the ballot for the election of the officers nominated for the year and members of the Council to fill the vacancies caused by the death of J. H. Mangles, Esq., and the retirement of the Right Hon. Lord Aberdare and the Right Hon. Viscount Enfield. The officers elected were—President, Sir Trevor Lawrence, Bart., M.P.; Treasurer, William Haughton; Secretary, Major F. Mason; Auditors, John Lee, James F. West, and Wm. Richards.

In commencing a few observations upon the position of the Society, Sir Trevor Lawrence remarked that it was unnecessary for him to enter fully into the details, as the report issued to the Fellows gave all the information needed. He felt it his duty, however, to express the Society's great regret at the resignation of Lord Aberdare as President, which had been necessitated by his numerous pressing engagements. During ten years his services had been most valuable to the Society, and the Council desired to publicly express their indebtedness to him in a resolution to the following effect:—"That the grateful acknowledgments of the Council and Fellows of this

Society be conveyed to Lord Aberdare for the services he had rendered them during the past ten years, which had been the means of extricating them from a position of much danger." This was carried unanimously. The Society had also sustained a great loss by the death of Mr. Mangles, who had given so much energy to their service that all who knew him would understand their loss was a serious one.

During the past year the Council had published the official report of the Apple Congress, of which there had been a considerable sale, and there was so general an opinion as to its value that an additional issue was under consideration. The Daffodil Congress held in the spring last year was a signal success. So large a number of Daffodils had never before been exhibited. Growers of these plants from all parts of the country assembled, and a most interesting discussion followed on the nomenclature, which resulted in a report being drawn up that is likely to be generally adopted. It is hoped that the report will be issued in the spring, when it is expected that another show of Daffodils may be obtained, though probably on a less extensive scale than that of last year. The success attending the Daffodil scheme and a consideration of the widely extended cultivation of Orchids had induced the Council to make arrangements for an Orchid conference, which there is every reason to expect will be well supported. A vast capital is invested in the importation of Orchids, and such large numbers of plants have been brought into the country of late years that many very beautiful species and varieties are now within the reach of the most moderate purse. It is desired that they should obtain a thoroughly representative exhibition, and the date had therefore been fixed somewhat late to render the conveyance of the plants safer than would be the case earlier in the season.

The exhibitions of 1884, which had been chiefly devoted to vegetables and fruits, though flowers had also been well represented, they had all been very successful, and great interest had been taken in them. Messrs. Ware, Kelway, and Turner contributed some beautiful collections of hardy flowers, which had been much admired. A similar series of exhibitions has been arranged for the present year, but not exclusively devoted to vegetables; Grapes and Orchids have, however, shows specially devoted to them.

The financial position of the Society is not unsatisfactory, though the balance is much smaller than last year. Then it was due to the very favourable arrangements made with the Fisheries Committee, which exhibition proved successful in an unexpected degree. There was no such advantage in 1884, and in consequence the balance was much smaller. The Society is, however, under many obligations to Sir P. Cunliffe Owen for his assistance in making satisfactory arrangements with the Committees of the International Exhibitions, by which they were enabled to extend to the Fellows this year the same privileges as last. There was also one item on the credit side which could not be depended upon as of much value—the subscriptions due from Fellows not paid last year, which can only be recovered by going to law.

The income from Chiswick had been much less, chiefly owing to the failure of the Apple and Pear crops, and to the fact that the Grapes had not sold so well as usual, the markets being overstocked. On the whole, however, the position of the Society is satisfactory; their chief object was the promotion of horticulture, and in this they were greatly assisted by experiments carried on at Chiswick under the superintendence of Mr. A. F. Barron, to whom the Society is under great obligations. Their chief cause for regret was the want of a proper place for meeting, but this affected the Council most who had only the Lindley Library, but it was hoped that before long better accommodation would be obtained. In conclusion he thanked the Fellows for their attention to his remarks.

Mr. Guedella observed that he had drawn up a resolution similar to that proposed by Sir Trevor Lawrence, thanking Lord Aberdare for presiding over the Society during so many years, but he was pleased to accept the one adopted by the Council.

Mr. Liggins remarked that it is stated in the report that the appointment of an Assistant Secretary is under consideration, and he wished to know if anything had been decided.

Sir Trevor Lawrence said in reply that there were some financial difficulties in the way of the proposed appointment, and the matter was still under consideration.

Mr. Johnson desired to learn if the expense of the Kensington Garden would be as great during the coming year as in the past one, as he considered the amount in the report, £400, was excessive.

Mr. W. Haughton stated that the Society merely incurred the expenses necessary to keep the Garden in a suitable condition for visitors, that all extraordinary expenditure was provided for by the Exhibition Committee. The prize money contributed by the Health Exhibition Committee does not appear in the accounts, as it was paid over directly to the exhibitors.

Mr. Shirley Hibberd thought that seeing the number of Fellows was decreasing it was desirable they should consider the possibility of increasing the interest of the meetings. The Society had always had the sympathy of the best spirits of the horticultural world, but they ought to do more to encourage amateurs. He frequently heard people say, "I could bring some good plants, but the only reward would be a cultural commendation." There is an expense attending exhibiting that suggests the advisability of offering money prizes to improve the meetings. This would encourage gardeners, increase the number of exhibits, and probably induce many new Fellows to join the Society. The Tuesday exhibitions were now almost exclusively devoted to trade contributions, which were very useful, but they wanted more gentlemen exhibitors, and their Chairman (Sir Trevor Lawrence) had set them a good example in this respect.

The adoption of the report and balance-sheet was then carried; the result of the ballot, as already stated, was read; and the names of the defaulting Fellows were also read, thus excluding them from the Society until their subscriptions are paid, but does not prevent the Society recovering from them as debtors if necessary.

Sir Trevor Lawrence tendered his sincere thanks to the Fellows for his election as President; he assured them that no one had horticulture more at heart than he, and he should do his utmost to advance its interests.

The business terminated with a hearty unanimous vote of thanks to the Chairman.

ANNUAL REPORT FOR 1884.

The usual accounts and balance sheet are submitted to the Fellows.

The Council have the satisfaction of being able to report that they have

CR.	£	s.	d.
By Balance of Revenue Account brought forward 1st January, 1884	2,568	10	9
„ Annual Revenue Account—Balance for the year 1884	28	6	9
	£2,596	17	6

We have examined the above Account with the Books and Vouchers, and we find the same correct.

29th January, 1885.

JOHN LEE,
JAS. F. WEST,
W. RICHARDS, } Auditors.

PLUMBAGO CAPENSIS OUT OF DOORS.

IN a recent issue of the Journal (see page 70) appeared an account of an interesting flower border by Mr. Thomas Record, in which *Plumbago capensis* is highly spoken of as an outdoor summer decorative plant. I am desirous of trying this, but unfortunately I have no plants that can be removed. I therefore propose to insert cuttings now, and grow the plants until the beginning of next June, when, after being duly hardened, I presume they could be safely placed out. But the plants spoken of by Mr. Record were perhaps two or three years old, and this, as he rightly suggests, was no doubt the cause of their flowering so abundantly. I should be greatly obliged to Mr. Record, or any other of your correspondents who may have had experience with this plant, if they would inform me whether plants so young as those I propose to prepare would be likely to flower freely the first year, or whether it would be more advisable to grow them during this coming summer, and use them where required another season.

The plants can, I presume, be lifted in autumn and stored in any place secure from frost for the winter without occupying valuable house room.—A. E., *North Devon*.

ROYAL BOTANICAL AND HORTICULTURAL SOCIETY OF MANCHESTER.

THE annual report of the Council of this Society states that the amount received from proprietors and subscribers of £2 2s. per annum is £50 less than was obtained last year. The income from life members also shows a decrease over the year immediately preceding. The second source of income—that from exhibitions—although above the average, is about £300 less than that of last year. This item of revenue is subject to influence over which the Council has, and can have, no control. It may not occur to the lovers of plants, flowers, and fruits how great is the debt they owe to these exhibitions, which are carried out at great cost of money and anxiety. It may be mentioned that the Society has paid upwards of £1000 for prizes alone at this year's exhibitions. The long list of certificates of merit awarded to the exhibitors of new or improved plants and flowers is some index of the energy of the cultivator, which such awards are intended to stimulate. The special exhibitions of novelties must not be considered simply from a commercial point of view; the pleasure and gratification reaped by the members of the Society and their friends, although not expressed in figures, is an element of great importance. During the past season over 1000 trees and shrubs have been planted in various parts of the grounds, and improvements have been effected in the arrangement of the gardens generally. A considerable number of medicinal, economic, and other plants have also been added to the collections during the year, and these are a source of interest to the scientific student as well as to the general public. A new range of glass houses has been erected during the year. This, with several other extraordinary items of expenditure, amounting to about £500 altogether, has been paid out of the revenue of the year. Additional seat accommodation for about 800 persons has been provided, and is much appreciated on fête days. Owing to the very great interest taken in the cultivation of Chrysanthemums, the Council desire, if possible, to hold an exhibition on a much larger scale during the current year. The suggested arrangements for the year 1885 are:—Floral meetings at the Town Hall, 17th and 18th March, and 28th April; National Horticultural Exhibition at the Gardens, 22nd and 29th May inclusive; Rose Show at the Gardens, 11th July; Chrysanthemum Show, 17th and 18th November. In addition to the above, the exhibitions of the National Auricula, Tulip, and Carnation and Picotee Societies will be held during the season.

The exhibits of the year were eminent for their quality, more especially those of the Whitsun week show. The receipts during the year fell considerably below those of the preceding twelve months. But he thought there were circumstances which satisfactorily accounted for the falling off, or at any rate afforded some consolation to them for the addition of £800 to their debt. In the preceding year great efforts were made by the Curator (Mr. Bruce Findlay) and the Treasurer (Mr. Joseph Broome) to obtain money to cover the outlay on the new exhibition house, and they received £1897. When this special effort is taken into account it is not very surprising that there should be a falling off last year. The falling off really amounted to £1726. The bulk of it was in the life members' fund, which was only £300 as against £1900 in the preceding year. There was a slight falling off in the receipts from the floral meetings in the Town Hall, but there was a slight increase in the receipts from the Rose Show. The visitors to the gardens during the year including subscribers and their families, numbered about 50,000.

THE INSECT ENEMIES OF OUR GARDEN CROPS. THE FILBERT OR COB-NUT.

TIME was when the few and scattered inhabitants of this island subsisted chiefly upon the food provided for them by Nature, and amongst the vegetable products of the woods and forests the wild Nuts were of no small importance. The fruits of the Oak and Beech were doubtless abundant, and that of the Hazel more plentiful than it is now, owing to the frequent lopping of the underwood in coppices

where the tree would flourish if left alone. The extended list of articles of diet which we have at command has made Nuts of all kinds to become of minor value as foods, although they are not lacking in nutriment, but we look upon them rather as relishes than as necessities of life. Hence modern horticulture concerns itself but little with these, and indeed only three home-grown species are extensively sold—viz., the Nut of the Hazel, with its varieties, and that of the Walnut and the Chestnut.

Plantations of Filberts and Cobs are not uncommon, particularly in the south of England, the Kentish Cobs have long had a well-deserved repute. The crop from these escapes some of those atmospheric perils which are apt to affect many fruits, but it is sometimes deteriorated by the attacks of a prolific though small insect. To most of those accustomed to eat Nuts, the larva or grub of *Balaninus nucum* is an object only too well known, a creature that has often been seen, and perhaps tasted unwillingly. It occurs on the wild Hazel and the cultivated varieties also. There appears to be an impression on the minds of some growers that it is undesirable to have a Filbert plantation near a place where wild Hazels abound, because the weevils may travel from one to the other. But the female insect is rather sluggish as usually noticed, although the male insect does fly with some degree of briskness.

The Nut weevil (*B. nucum*), fig. 24, has the beak which is characteristic of that tribe, and which is nearly as long as the body, having the antennæ in the middle; this is of a bright chestnut colour. On the body is a double row of points or punctures, and it is covered with a fine down, which gives the wing-cases a tawny appearance, but when this is rubbed off the surface is found to be black. During the winter months the insect is in the chrysalis stage, about May the winged condition is assumed, the females crawling along the twigs and depositing a solitary egg in each young Nut they visit. This habit of theirs has led to the trial of beating the branches just at their season, something being put beneath the trees to secure them. Unless this

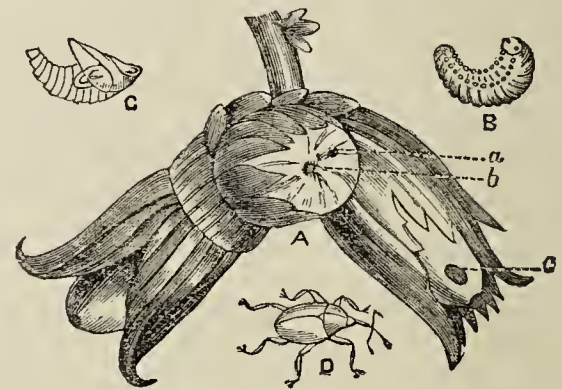


Fig. 24.—The Nut weevil.

is done very cautiously not a few of the weevils escape, and the trees are likely to suffer from the process. Weevils have not uncommonly been found in July or August, hardly a second brood, but a part of the usual brood later out it would seem; if they do not deposit eggs then, they may live through the winter for that purpose, and if seen should be destroyed. As the Nut grows the larva or grub within increases its size; by instinct it avoids biting the fruit in a way that would at once destroy it, but quits its abode just at the season of ripening. By decomposition in the body of this grub the agreeable pulp of an ordinary Nut is converted into a bitter substance, which immediately disgusts the palate. It is plump, muscular, but legless, the general colour being a dull white, though the horny head is brownish. Occasionally the infected Nuts fall before fully ripe if the grub is matured, but commonly this descends from the Nut while it is on the branch, and falling to the ground, there buries itself. As the insect winters in the earth it is advantageous to turn over the surface soil where the species have been troublesome. Some of the immature weevils being thus exposed will die or be eaten by birds, others will be buried deeper; this, it has been found, tends to prevent their after emergence to deposit eggs. And about the time the weevils are likely to appear the ground may be dressed with soot, or with soot and lime, or watered with a solution of petroleum. In Kent the owners of plantations believe it is important to strengthen the Filbert against the attacks of this insect, and others of the caterpillar kind, by applying abundant manure, that from farmyards is avoided usually.

Of the caterpillars that prey on the leaves of the Nut, some are minute, and their operations are of no consequence, only they somewhat disfigure the trees. Two species of the geometrine tribe have been noticed as injurious to Filbert plantations; one of these is the very abundant and well-known caterpillar of the winter moth (*Chimatobia brumata*). In the dull winter days the wingless females place their clusters of green eggs on trunk or branches, and no sooner have the leaves begun to show themselves than the young caterpillars are at work. Their habit of drawing the twigs together with threads makes

their doings the more unpleasant, and each caterpillar will consume or damage many leaves. It is, in this instance, better to prevent the emergence of the caterpillars, which are not easy to get rid of, by killing the insect in the chrysalis and moth state, or by clearing off the patches of eggs. The brownish freckled caterpillar of the mottled umber (*Hybernia difoliaria*) shows itself some seasons on the Hazels, seldom numerous, but they also are ravenous feeders for their size. Where a Filbert plantation is not far from Hop grounds the yellow and green hairy caterpillar of the "hop-dog" (*Orgyia pudibunda*) may turn up with other occasional or rarer feeders upon this species; and it is now and then discovered that the caterpillar of the leopard moth has bored into the Hazel wood, leading to its gradual decay.

Evelyn, two hundred years ago, told the readers of one of his books that the Walnut was so esteemed in Germany that in some places a young farmer could not marry till he had planted a specified number of these trees. This, doubtless, was an anecdote told with a purpose. The good old naturalist was anxious to extend the culture of the Walnut in his native land. We should not probably find such interest taken in the tree now were we to visit Germany, and one reason for the value set upon it then was that a variety of uses were



Fig. 25.—*Echeveria retusa*.

found for several parts of it, besides the wood and the fruit. There was a time, moreover, when the Walnut was planted more freely in England than at present, with the view to profit. One advantage the grower can reckon upon, that the tree has few insect enemies; from some cause the leaves of the Walnut are distasteful to most caterpillars, though we have noticed as occurring upon it the moderately common looper caterpillars of the peppered moth, also that very general feeder, the striped and shaggy caterpillar of the buff-tip moth, will vary its diet by a visit to this tree, and if it should be found upon it there will probably be a colony of a hundred or two. Occasionally a Walnut trunk furnishes an abode to some caterpillars of the wood leopard, already referred to. Both in this island and on the Continent the Chestnut suffers very little from insect attacks, the only species that is worth noting is a small beetle, *Pyrale phlugione*, the grub of which pursues the habit of *B. nucum*, and wherever it is observed is discovered to be preying upon the interior of Chestnuts, which it enters when they are at an early stage, but, unlike the Nut species, it kills the Chestnut fruit ere ripe, and brings it to the ground.—ENTOMOLOGIST.

ECHEVERIA RETUSA.

THOUGH scarcely so well known as it deserves, this plant is very useful for winter flowering and can be employed in a conservatory or greenhouse with great advantage at a season when the chief difficulty is to obtain a diversity of flowers. In the Royal Horticultural Society's Gardens at Chiswick there is now a pretty display of these *Echeverias*, which flower abundantly and continuously from Christmas onwards into the

early spring months. The flowers, too, are of an extremely bright and pleasing colour, quite a refreshing tint amongst the prevailing softer shades of most forced plants. In its general habit the *E. retusa* agrees with the other members of the genus, but the radical leaves are neither so regular in form nor arranged in so perfectly rosette-like a manner as in *secunda* and some others. When young they are acute, but become ultimately blunt and irregularly scalloped or crenate, and bordered with brownish purple.

The flower stem, which is also stained with purple, but of a brighter tint, grows from 1 foot to 18 inches high, the blossoms being produced at its summit in a dense, drooping, branched panicle, which becomes gradually more erect as the flowers develop themselves. These are externally of a rich crimson-scarlet colour, covered with a delicate bloom, and internally of an orange-yellow; they continue expanded some days before fading, and as strong plants will produce several flowering stems a succession of blossoms is maintained for two or three months in winter, a season when flowers of much inferior interest to the *E. retusa* are generally highly valued.

Its cultivation is of the simplest character; sandy loam enriched with a little leaf mould, or even sandy loam by itself, if not of too sterile a nature, will be found sufficient for its requirements. It is hardly necessary to state that the pots should be well drained to one-third of their depth at least, for this is an indispensable condition to success in the treatment of succulents.

It may be more important to observe that the flowers of the *Echeveria retusa* being produced in winter, it will require more water at that period than those species which flower in summer and autumn. During its period of growth, which succeeds that of blossoming, it may also be kept in a moderately moist condition; but after this is completed, which will occur about the end of July, water should be withheld, and to facilitate the ripening process the plant may then be stationed out of doors in a sunny corner for a month or six weeks at least, but must be protected from rain, though slight showers will do no harm. This exposition will be but a poor imitation of the dry season of the tropics, but will at any rate be more conducive to the production of flowers than a permanent occupation of the window. If the plant be then removed about the middle of September to the sitting-room, and cautiously watered, it will hardly fail, after the lapse of a few weeks, to throw up its flower stems.

Increase is easily effected either by the offsets, which may be severed and treated as cuttings, or by the stem leaves, which are readily detached, and will root freely if, after being dried for a day or two, they are pressed into a pot of sandy soil. The leaves of some of the species will throw out fibres from the back if simply laid on the soil, as in the case of the *Gloxinia* and other plants; and it is to be presumed that those of *retusa* will root in a similar manner. Flowering plants are, however, produced more speedily from offsets, and as these are formed in some abundance, the leaves need only be employed when a considerable number of young plants is required. In either case they are best taken in spring or early summer, so that the whole of the warmest months in the year may be available for the rooting process.

As an element in the formation of the geometrical beds that are still popular in certain quarters, or for other outdoor uses, the *E. retusa* is less desirable than some other species, such as *secunda* and *secunda glauca*, *metallica*, and its hybrids, but as a winter bloomer either in the greenhouse or the window garden it deserves to be kept in view.

With one or two exceptions all *Echeverias* are natives of Mexico, from which country the *E. retusa* was introduced about thirty years since by the collector Hartweg, who transmitted seeds to the London Horticultural Society. The cauline leaves of all the species deserve a passing notice for the curious manner in which they are attached to the stem, the leaf adhering by its surface near the base, but so slightly as to be easily detached without any apparent injury to the cuticle if care be taken.—W. T.



HARDY FRUIT GARDEN.

SOFT swelling buds attract the bullfinches, tomtits, and other small birds, and they are now in full activity upon the buds of Gooseberries, Pears, Apples and Cherries. Prompt measures must therefore be taken to ward off attacks which, if persisted in, may lead to the destruction of the fruit crop. The best remedy is to dissolve 2 ozs. of softsoap in a gallon of warm water, and add equal parts of clay and soot to impart to it the consistency of thin paint. Syringe the branches with this, and immediately afterward give them a thorough dusting with lime so as to quite cover every branch, and the buds are thus rendered unpalatable and tolerably safe from harm. Early Pears and May Duke Cherries are especial favourites of the bullfinches. Once let them attack the buds, and they persistently return till all of them are destroyed. If lime-dusting is objectionable, as it sometimes is upon trees in conspicuous positions, recourse must be had to shooting the pests. We saw three bullfinches upon our best May Duke tree last week. We shot two, and the other flew off, but it soon returned, and was shot. Since then the tree has apparently been untouched, presumably because other bullfinches have not

discovered its dainty buds. This fact of particular birds repeatedly going to the same tree is noteworthy; a little time and pains given at the outset to their destruction may save the tree from further depredations. The mild weather has induced an early development of catkins upon the Filberts. As soon as pollen is plentiful enough to impregnate the female blossom, not a day should be lost in doing the pruning. This brings the winter pruning to an end once more, and fruit trees of all sorts should now be as trim, neat, and clean as pruning, training, and dressing can make them. The dressing of the branches of old fruit trees is often carried to a hurtful extreme. Examine the bark of an old Apple tree that is covered with lichens, and it will be found soft and pliant to the touch, and if laid open with a knife it will be found perfectly healthy. Such trees generally have the branches thickly set with fruit buds, and with a favourable spring the crop of fruit is abundant.

Strawberry Beds.—The strong plants of fruiting beds look full of promise for the coming season, with foliage of a large size and green sturdy appearance. The runners were cleared off these beds, manure put between the rows and dug in immediately after the last fruit was gathered. A quick sturdy autumn growth of roots, foliage, and crowns followed; the plants were then in the best possible condition to pass safely through winter weather, and to produce plenty of fine fruit next summer. It is by thus supplying the unmistakable wants of the plants in autumn that we insure a full crop of fruit next year. Timely culture is the best culture, leading to the highest possible results. We long ago proved that to leave the soil between the rows undug, in heavy land, and apply a top-dressing of manure in autumn was bad practice—bad indeed did we find it, for what with hard sodden soil about the roots, and an army of slugs attacking the crowns from the snug winter quarters which the manure afforded them, we lost hundreds of plants, and the fruit crop of the remainder was anything but satisfactory. New beds may now be made with the strong plants established in nursery beds in a mixture of leaf mould and coal ashes, out of which they are lifted with such large balls of compost and roots that they sustain hardly any check, and will yield a little early fruit this season. Although this is a very good way of making new Strawberry beds, it is not the best way, but in small gardens where space cannot be had for making beds of the earliest runners in summer, it answers best to plant the early runners in nursery beds, and to transplant them carefully now, rather than to make beds with late runners which cannot be well established in the soil before cold weather sets in, and from which no fruit can be had till the second year after planting.

FRUIT FORCING.

VINES.—Early Vines in Pots.—When all the Grapes on these have been properly thinned keep the laterals below the bunches closely stopped, those in advance of the fruit being allowed more freedom, provided there is room for tying them to the trellis. Be careful not to overcrop, but remove surplus bunches, leaving no more than the Vines with liberal treatment are likely to finish well. If the pots are placed on brick pedestals the fermenting materials should be placed loosely about the pots, so as to prevent the heat rising above 80°. Liquid manure may be supplied liberally, weak and tepid. In order to be able to surface-dress the soil have rims of zinc about 4 inches deep to fit inside the rims of the pots, filling these with turfy loam and decayed manure in equal parts. If the Vines are to remain until the Grapes are ripe allow the roots to pass into the plunging material, as the fruit will be fine in size in proportion to the number of feeders. Damp the houses two or three times a day, but avoid wetting the pipes when hot, or it may lead to rust; also avoid admitting cold currents of air for a similar reason, breaking the force of keen winds by some wool netting tacked over the ventilators.

Early House.—Close attention must be given to stopping, tying, and thinning. It is necessary that superfluous bunches be removed before the berries have swelled much. In taking account of the crop it will be necessary to consider the size as well as the number of bunches, as a reduction in number of bunches does not always correspond to a reduction in weight when the Grapes are ripe. Allow a free extension of the laterals above the bunches, always bearing in mind that laterals only are valuable when the foliage is exposed to light. Supply tepid manure water to the inside border liberally, and mulch with short manure.

Early Muscat House.—Where these were started in December and have been steadily progressing they will have reached the flowering stage, and, assuming they have a house to themselves properly heated, they should have a night temperature of 65° to 70°, with a rise of 10° to 15° by day, and in bright weather keep it at 80° to 85° during the day, and if the temperature rise to 85° or 90° after closing it will be advantageous. As the Vines flower every bunch should be carefully fertilised with Black Hamburgh pollen. To grow Muscats well they require very liberal treatment, and in the case of early ones they may have the benefit of a well-drained inside border. It is little use expecting Muscats to set well unless the border has been well mulched through the previous growing season, the roots thereby being kept at the surface and the wood thoroughly ripened.

Midseason Houses.—Vines in these should be started according to the time at which the Grapes are wished ripe. Those started now will have the fruit ripe in July. The inside borders should be rendered thoroughly moist by repeated supplies of tepid water, and in the case of weakly Vines with liquid manure. The night temperature should be 50° to 55°, and 55° by day artificially if dull and cold, or 60° to 65° with sunshine. Young canes may be depressed to insure their breaking evenly to the bottom. Syringe twice a day, morning and early afternoon. Damping the floor with tepid liquid manure will afford an ammonia-charged atmosphere inimical to insects,

and encourage a good break. Ventilate so as to change the atmosphere at least once a day.

Late Houses.—The Grapes having been cut at the beginning of the year, the Vines pruned, the house cleansed, and the border surface-dressed, they will have had a season of rest, and as late Grapes require as a rule a long season of growth to finish their crops satisfactorily for keeping, they should be started so that the fruit will ripen during August and September. Hence the houses must be closed by the end of this month, and where the Grapes are wanted for use during the early winter the Vines should be started at once. At closing, the borders inside should be well watered at a temperature of 90°. The Vines will need syringing two or three times a day, and if fermenting materials are at command make up a bed in the house, which will save fire heat and generate a moist ammonia-charged atmosphere very favourable to the Vines breaking strongly. The night temperature may be kept at 55°, and between that and 65° by day, by which a gradual advance will be made with every prospect of the Grapes becoming thoroughly ripened.

PINES.—Fermenting Beds.—As a medium of affording heat to the roots these are the best, and as the usual practice is to take out and replace or make up such beds just before winter, and to incorporate the materials employed so as to insure the heat generated being as steady and as durable as possible. These beds will again require attention and must be renewed as soon as the weather is favourable. Towards the close of the month a batch of suckers may be started, and the requisite attention given to any that require it, as repotting, for which timely preparation should be made by having the soil in a fit state.

Succession and Fruiting Plants.—As there is now more light and sun heat it will excite the plants into growth, and when this is apparent a slight increase of the artificial temperature should be made. Fruiting plants must have every attention to insure vigour by maintaining a proper degree of humidity, also taking advantage of every gleam of sunshine to keep the temperature to 90° or 95°, closing the house early in the day.

MELONS.—Plants from seed sown at the beginning of the year, and which were given a shift at the end of the last month, will now be ready for planting on the ridge in the Melon house. Care should be taken to have the soil sufficiently moist, so that they turn clean out of the pots. Press the soil firmly around each plant, but keep it from the base or collar, as it may from becoming too damp cause canker in the stems. Secure the sticks to which the plants are trained to the first wire of the trellis. Water will not be necessary if the soil be in suitable condition, and if absolutely needed it must be given with great caution. Much, however, depends upon circumstances. If the bottom heat is supplied by fermenting materials very little water will be needed, especially in dull weather, but where it is furnished by hot-water pipes water will be required more frequently. On bright sunny days syringe lightly, and close early in the afternoon with a temperature of 85°, rising to 90°.

CHERRY HOUSE.—The temperature may now range from 40° to 45° on cold nights, and 5° more when the weather is mild, 50° by day artificially if dull, and 5° more if mild, advancing 10° to 15° from sun heat and a free circulation of air. Before the flowers expand syringe thoroughly with an insecticide, clear and not too strong quassia water being the best, as it leaves no stain and prevents insect attacks.

Planting Young Trees.—Complete any necessary alterations at once. If fresh trees have to be introduced they must be planted now, and means should be provided for shading them when they start into growth. It is well to have trees that have been some three or four years trained to walls, and that have been annually lifted so as to move with perfect safety. Such trees fruit at once, and with proper attention to surface-mulching keep up the growth without check, so that fruit is had the first season. Such trees are far superior to those one or two years cut back, which experience a great check in moving, and when they start they make stronger long-jointed growth, which lays the foundation of gumming, to which trees grown on the moderately progressive system are not subject.

THE FLOWER GARDEN AND PLEASURE GROUND.

Bedding Plants from Seeds.—There are several kinds of bedding plants that may be raised from seed; and although the plants in some cases may not be so reliable, especially as regards habit of growth, as are those obtained either from cuttings or by division, they will yet be found very useful. The strains of Petunias, Verbenas, Lobelias, Ageratums, Pentstemons, Tuberos-rooted Begonias, Antirrhinums, Phlox Drummondii, Marigolds, Tropæolums, and others, have all been much improved of late years, and all may be safely employed in filling the various beds—always, however, supposing a particular even growth is not considered necessary. Besides these flowering plants there are several fine-foliaged kinds that are propagated either solely from seeds or may be thus raised by those who have no old plants to furnish cuttings or divisions. These include Cannas, Acacia lophantha, Chamæpeuces, Centaureas, Solanums, Wigandias, Japanese Maize, Cinerarias, Ricinuses, and Grevilleas. It is yet too early to sow seed of the majority of the above, but there are a few kinds that either do not germinate very quickly or the seedlings are of slow growth, and these should be sown early in February.

Verbenas.—Mixed beds of these are frequently strikingly beautiful, one packet of seed usually including a great variety of variously coloured flowers. Seedlings, too, are generally more robust in habit, succeeding where perhaps plants raised from cuttings would fail. The seed is, as a rule, rather slow in germinating; but if it is new and a brisk bottom heat is available, no difficulty should be experienced in securing plenty of seedlings. Sow the seed at once on the surface of a pan of light sandy soil,

over thinly, water through a fine-rose pot, stand on a hotbed, and cover with a square of glass. Shade heavily and keep the soil uniformly moist, and when the seedlings are up remove the glass and shade from bright sunshine only. When large enough to handle they should be pricked off thinly in boxes of good soil, kept growing in a warm frame or house till well established, and then be gradually hardened off, transferring them to a cold frame before they become drawn and weakly. They may be hardened off and bedded out in most localities by the middle or end of May. *Verhena venosa* may also be raised from seed, but those who have a few old plants will find that the stock is most easily obtained by simply cutting the fleshy couch-like roots into short lengths, dibbling these in thickly in boxes of good soil, and placing in heat till growths appear.

Lobelias.—In many gardens the whole stock of dwarf *Lobelias* is obtained from seed, and if the strain selected prove a good one, the seedlings vary but little in either dwarfness, habit, or colour. We prefer raising our stock from cuttings or, better still, by dividing old plants; but at one time we depended upon seedlings, notably of Veitch's strain of *L. speciosa*, *L. Erinus erecta*, blue, rose, and white sorts. *L. pumila magnifica* and *pumila grandiflora* are also to be depended upon. The autumn is a good time to sow the seed, the seedlings remaining in the pans till the spring being then pricked out in boxes of good soil. Failing this, no time should be lost in procuring and sowing the seed. The pans or pots should be well drained, a little rough soil going over this, filling up with a finely sifted mixture of loam and leaf soil, with plenty of sand added. Make the surface firm and level, water it through a fine-rose pot, and in about one hour afterwards sow the seed. No soil should cover these minute seeds, but a little silver sand may be dusted over them. Cover with glass and place in brisk moist bottom heat and shade heavily. If found to be too dry at any time do not water and thereby dislodge the seeds, but moisten the soil by dipping the pot in a pail or tank of warm water. Directly the seedlings are large enough to handle prick them thickly in pans or boxes of light soil; keep them warm and shaded till well established, when they may be placed in cold frames, and eventually either given more room in boxes or be temporarily bedded out in rough frames.

Tuberous-rooted Begonias.—These will eventually find their way into every flower garden, and when well grown no bedding plant surpasses them for brightness and durability, especially in wet seasons. Seedlings raised this spring must not be expected to prove very serviceable next summer, but under fair treatment they will form good bulbs, which will, with a very little trouble, grow strongly and flower abundantly the following season. Our seedlings during the first season are grown in a trial bed, and only the best are saved. Messrs. Laing and others supply seed of strains most suitable for bedding out, these being of compact growth and produce round flowers of good size and substance, borne on erect and stout footstalks. The seed being very minute, extra pains must be taken when sowing them, though not more so than in the case of *Lobelias*; in fact, it should be treated exactly the same. If fine leaf soil is not available substitute peat, both for the seed pan and when pricking off the seedlings. The soil in seed pans should never be allowed to become dry, and, on the other hand, care should be taken to prevent its becoming sour. Prick out the seedlings as fast as they become large enough to handle.

Antirrhinums and Pentstemons.—These, if raised early in the year, may be grown to a good size by bedding-out time, and when planted in mixed or ribbon borders or in single beds are very showy throughout the season. Separate colours of the former can be had, and a good white variety invariably proves of great service. In both cases the seed is small, and should, therefore be sown after the manner of *Lobelias*. When the seedlings are fairly strong, and before they are badly crowded, either prick them off in boxes of good soil or prick them out on a slight hotbed, the frames being withdrawn late in April or early in May. They will stand a little frost, and can be readily transplanted with a good ball of soil and roots.

Cannas and Acacia lophantha.—The seeds of both kinds are large and very hard, and sometimes fail to germinate. Soaking them in warm water for about twenty-four hours frequently has the effect of softening their cases, and materially hastens germination. Sow the seeds at once in pans or pots filled with light sandy soil, press them well into it, plunge them in brisk bottom heat, and take care the soil does not become very dry at any time. Pot off the seedlings when in rough leaf, singly into 3-inch pots; keep them growing in heat, and give one shift before they become much root-bound.

Grevillea robusta.—New seed of this useful fine-foliaged plant germinates readily if plunged in a good moist bottom heat, and in this and other respects, with the exception of soaking the seed, which is unnecessary, require to be treated similarly to the *Acacia lophantha*. It will be found most effective during the second season after sowing, and well-furnished plants, besides being useful in mixed and other beds, are also available for house decoration during the winter.

THE BEE-KEEPER.

ARTIFICIAL SWARMING.

I HAVE two stock hives. My object is honey and moderate increase. Will the following plan succeed well? Say in the first week of May, if stocks are sufficiently forward, in the middle of a fine day when many

bees are at work, drive all the bees out of B into the new hive C, which place on B stand. Remove B to A stand to catch all bees out at work at the time, and place A 3 feet from the old stand. Will A be very much weakened? Will B be sufficiently filled to issue brood hatching out? Another thought. When B is empty, all the bees being driven out prior to placing on A stand, could a young queen be introduced by placing her and a score of bees amid the combs, first sprinkling the hive and the queen with minted syrup? Would the bees when they came from the fields destroy her or not?—SANDBACH.

[In artificial swarming, as in other things connected with apiculture, let it be as near the natural as possible, which is not the case in your proposed method. By driving all the bees out of B the young bees, so essential as nurses, are for many days taken from their useful sphere and consigned with their elder sisters to an empty hive, where they are not required for some days after the operation, even though the weather be fine.

The placing B on A stand is not likely to satisfy the bees of A on their return from the fields, and they are almost sure to enter their own hive only 3 feet removed. In such an operation the stock hive should be placed at a considerable distance out of hearing, sight, and smell. But though the flying bees of A did take to B, there is the danger that they would not be numerous or youthful enough to attend to eggs and brood satisfactorily, and in all likelihood many eggs and larvæ would be destroyed; thus by imprudence and acting as proposed would at one stroke not only reduce the numbers of field workers but materially weaken the stock hive for the season. When bees are deprived suddenly of their hive and queen they generally fly about in a distracted state a short time, and will then cluster near where their hive stood. If the day is cold they soon become chilled; if warm, they will enter the nearest hive, but very often such bees are killed—though not at the time—usually after dusk, when if watched they will be seen and heard leaving their hive in a wounded state, just enough to cause death, but still able to fly far enough to deceive those who advocate strengthening weak hives with a few stronger bees. The placing of a queen with a few workers in a strange hive as suggested is risky and not likely to give satisfaction. Queens, like workers, have a certain amount of terror when introduced to a strange hive, and generally make an effort to leave it; but should she not, her timidity acts as an inducement to the stronger bees to an attack. The only reliable way of introducing queens is to deprive the bees of the power to raise another and encouraging fraternisation by caging her in the centre of the cluster for at least twenty-four hours; when released it should be done in a way not to excite the bees in the slightest.

There is no better way of taking artificial swarms than the common way, so long practised and described by the late Mr. Pettigrew. Invert the hive when ripe for swarming (but not until then), place an empty one over it or attach it to the full one with temporary grips, holding them together at the edges, and kept at a little less than a right angle by a piece of bent wire. Drum on the sides of the hive containing the bees until sufficient bees have ascended into the empty one. This last plan leaves the operator's hands free, while the queen may be observed when she enters the empty hive. If swarms are taken artificially and placed upon a new site the bees are liable to go back; when this is suspected it is better that the swarm should take the place of the old stock. There is no such thing as a "unicomb" hive with "six standard bars." You may perhaps find an illustration of the hive you require in Neighbour's "Apiary."]

THE BRITISH HONEY COMPANY AND THE BRITISH BEE-KEEPERS' ASSOCIATION.

ON page 99 of your issue for January 29th you publish a communication from "A Hallamshire Bee-keeper," whose main object appears to be to cast reflections upon the above institutions. The arguments used by your correspondent to show that the British Honey Company is likely to injure apiculture, and that the Bee-keepers' Association has done nothing to assist the honey producer, are absurd and ludicrous. It has been well said that the present position of bee-keeping in the United Kingdom is almost entirely due to the British Bee-keepers' Association. It has done all and much more for the honey producer than hold shows, honey fairs, depôts, &c., as enumerated by your correspondent, "A. B. M.," on page 119 in your issue of the 5th inst. In various ways it has created a general demand for the honey produced in the United Kingdom. The acts of adulteration by unscrupulous dealers in honey were thoroughly exposed by the British Bee-keepers' Association at the late International Health Exhibition. This step cost the B. B. K. A. much trouble and expense. Its results, however, have been very beneficial to the English producer, as it has caused a greater demand for our home produce. Honey fairs and departments for the sale of honey at exhibitions are useful institutions, but they do not meet the requirements of the producer and the retailer all the year round. It has been well known in the bee world that during the season of 1884 the sources open to British bee-keepers for the disposal of their produce has not been adequate or satisfactory. It is to supply this deficiency that steps have been taken to form the British Honey Company. This company aims to assist the British bee-keeper by providing a ready and reliable market for his produce, and to create a larger demand for the honey produced in the United Kingdom by opening up new markets, &c.

Your correspondent's concluding remarks respecting ornamental beeless members are very ungenerous, and he may rest assured that in the

formation of the union to which he refers he will find that the British bee-keeper is not to be caught napping.—PRO BONO PUBLICO.

YOUR correspondents, "A. B. M." and Mr. G. Walker, jun., L.R.C.P., Wimbledon, in No. 1897, for February 5th (see pages 118 and 119) furnish your readers with some interesting, if not valuable, information regarding the British Honey Company, *British Bee Journal*, and the British Bee-Keepers' Association—apparently three different concerns, yet so closely allied that if one of them was dissolved the other two would be affected. Many bee-keepers a few years since felt keenly the effects of the *British Bee Journal*, and breathed a sigh of relief when it was announced that the Rev. H. R. Peel had purchased the rights of proprietorship from Mr. C. N. Abbott in order, as Mr. Peel said, "that bee-keepers might have a journal of their own free from any trade interests or bias of any kind." (See *British Bee Journal*, April 15th, 1884, page 128.) A commendable action, arising from pure motives to better his poorer brethren; and while none doubted his zeal, however, he may have overreached his discretion, and instead of making a bed of roses for himself of bee-keepers, may have raised a nest of hornets about his ears. Unless he can shake himself clear of having any connection with the Honey Company, and that the *British Bee Journal* is also independent of either the Honey Company or the British Bee-Keepers' Association, and show that bee-keepers might have a journal of their own "free from any trade interests or bias of any kind," he is likely to lose faith with many.

When the British Honey Company was first mentioned we were led to believe that it was for the interests only of bee-keepers; but when your Wimbledon correspondent announced that the shareholders had expectations of being "pounds to the better," and that he, through patience and hope, had arrived at the happy consummation of seeing the *British Bee Journal* the property of the British Bee-Keepers' Association. It now remains for someone to explain whether there is or is not a close connection with the Honey Company and the British Bee-Keepers' Association, and whether, judging from the actions of the latter, the *British Bee Journal* is entirely "free from trade interests." They might also say whether the forcing of either one standard or another upon bee-keepers is a fair action. I also ask the question if selling and dealing in foreign honey, though it is, according to "A. B. M.," put in "proper bottles, with labels that would please the eye as the honey would gratify the taste," likely either to gain confidence in either producers or consumers? The members of the British Bee-keepers' Association have said so much against foreign honey being so much inferior to the British honey that the only reason I can see for them dealing in it is that their own interests are of more importance to them than are the interests of the bee-keepers of the United Kingdom. Not one of your correspondents points to the benefits the poorer bee-keepers are expected to derive, or by what means and at whose expense the honey is to be sent to the market. True, "A. B. M." tells us of the £20 and £30 worth being sold at the Health Exhibition, brought there at great cost by the British Bee-keepers' Association. Is this so? Is it not the fact that a penny in the shilling as poundage is charged by the Association for all honey sold, and if this is the case, as I believe it is, then will not the bee-keepers themselves have all expenses to pay on any honey they may sell to the "Company?" If there is any plan necessary from what exists at present to bring the producer and consumer together, let it be done between themselves. It is neither a Honey Company nor pretty bottles nor labels that will give profit and a market to the one nor a genuine and cheap article to the other. I know something of the animus that existed in those who had the power to sway bee-keepers, and who was the first to denounce respectable firms charging too high a figure, yet the party referred to did not hesitate to take the highest figure for anything he had to dispose of; but good may come out of evil. Unless the Honey Company can boycott and compel people to purchase and eat a certain quantity of honey daily, just as the Association boycotted hive-makers who would not comply to their "standards," they will find themselves in perhaps as bad a position to get rid of their honey, home or foreign, as any bee-keeper, even though it is in "proper bottles with labels."

We have no information in what way the Honey Company means to dispose of the honey, but we may infer from "A. B. M.," that by selling it in a similar manner as was done at the Health Exhibition, shops and shopkeepers will be necessary, and if they sell at the same rate a little more than £1000 worth will be sold in the year; thus with wages "and proper bottles with labels," shop rent, taxes, and the interest of £1000 will put at least 4d. per lb. upon all the honey that passes through their hands, which by a more simple arrangement would be avoided. However, I leave this question to the bee-keepers themselves whether they will look to their own and consumers' interests, or to any honey company who are more likely to study their own interests than any bee-keeper however poor he is. If the talk is to be relied upon that has been published and emanated from members of the British Bee-keepers' Association honey would pay the bee-keeper at 3d. per lb. These words give us a fair idea of what our friends intend giving us for our own and bees' labour. My advice is, Sell your honey at the best market, and when that cannot be had eat it; it will save grocers' and doctors' bills.—A LANARKSHIRE BEE-KEEPER.

TRADE CATALOGUES RECEIVED.

Samuel Yates, 16 and 18, Old Millgate, Manchester.—*Catalogue of Vegetable and Flower Seeds.*

James Cocker & Sons, Aberdeen.—*Catalogue of Vegetable and Flower Seeds, 1885.*

Hare & Hussler, 42, West Street, Sittingbourne, Kent.—*Catalogue of Choice Garden Seeds.*

Samuel Shepperton, Prospect House, Belper.—*Descriptive List of Florist's Flowers, Border Plants, &c.*



TO CORRESPONDENTS

Artificial Manure (W. R. O.).—If you try the mixture recommended on page 106 last week you will perhaps find it will answer your purpose. The writer of the article has given much attention to the subject, and he is not satisfied with other than the best results.

Primulas (D. C.).—The flowers as having been produced by plants in 4-inch pots are very good, and the varieties diversified; but you can scarcely expect to establish a distinct and superior strain if you allow the pollen from the small smooth-petalled forms to fertilise the larger and finer flowers.

Pruning Clematis (Subscriber).—Clematis Duchess of Edinburgh belongs to what is known as the Florida type, and produces its flowers from ripened wood during the months of June and July when grown under natural conditions. But when grown in a pot under glass it will flower very much earlier. None of this type requires pruning except *C. florida plena*, which flowers very much later. The plump flower buds will be visible now along the wood of your plant if it has been well ripened. Plants of this type should be grown as strongly as possible and well ripened, then they will flower with certainty the following season. No pruning is needed further than the removal of the ends of any shoots that have grown late and have not matured, and all good firm growths should be secured to the trellis.

Soil for Rhododendrons (G. A. S.).—The soil most suitable for Rhododendrons and hardy Azaleas is good friable sandy loam. If the soil is light and poor it should be enriched by the addition of one-seventh of decayed manure and some fresh fibry loam, the latter being very advantageous. If leaf soil in a half-decayed state is plentiful it should be used in preference to the manure, for these shrubs root and grow with great freedom in leaf soil. When the soil is of a heavy nature nearly equal portions of leaf soil may with advantage be incorporated with it, also grit or coarse sand to render it free and porous. Peat is invaluable for mixing with heavy soil, but it is not really necessary for the purpose of cultivating these plants successfully. They are not so particular about soil as many others, but they will not grow satisfactorily where the land is thoroughly impregnated with lime.

Propagating Filberts (Constant Reader).—Propagation is effected by layers, cuttings, grafting, and seed. Shoots of the previous year's growth root readily if layered any time during the rest-season. Cuttings should be made similar to those of the Currant, the lower buds cut out in order to destroy their propensity to suckering. If they are to form neat little bushes, on a dwarfing system for small gardens, the cuttings may be nearly half a yard in length. Grafting is performed as with the Apple or Pear, and at the period when the buds first begin to swell. The common Hazel Nut and the Spanish Nut are generally used for stocks. Seed.—This practice is resorted to for the sake of raising new varieties, or for producing the ordinary Hazels.

Waterproofing Tiffany (A. E. T. T.).—It is not usual to soak tiffany coverings before using to preserve them from damp; the blinds are simply taken down after they have served their purpose and thoroughly dried before being put away for the season. We have been informed that sackcloth or canvas is made impervious to wet by steeping it in a decoction of 1 lb. of Oak bark in 14 lbs. of boiling water. This quantity of liquor is sufficient for 8 yards of stuff. The cloth has to soak twenty-four hours, then is passed through running water and hung up to dry. The flax and hemp fibres absorb the tannin, and are rendered more durable as well as watertight. We have not tried this plan, and if any of our readers have tested it or can otherwise assist you in your object, we will readily publish their experience.

The Cantaloup Melon (Idem).—This name is not applied to any particular variety, but to a section of Melons supposed to have been brought by some missionaries from Asia to Cantaluppi, a villa near Rome, and from thence they were sent to France in 1495, eventually finding their way to England. These, by intercrossing with the Rock Melons, produced the varieties now so numerous in this country. One is called the Cantaloup, but whether it is the same as Cuthill's Early Cantaloup that we grew many years ago we have no means of knowing. That was a free and good variety, the fruit weighing from 2 lbs. to 3 lbs.; but whatever your Cantaloup may be it requires the same treatment as the varieties usually grown in heated pits and frames.

Lapagerias in Vinery (A Single-handed Man).—The temperature of a cool vinery would be suitable for Lapagerias, and the plants do not object to some shade; therefore if the roof is not thickly covered with foliage in the summer we should not apprehend failure on that score; but it is possible that the air of the vinery when the Grapes are ripe might be too dry for the plants. This, however, is a question of management. We think we could succeed in growing a Lapageria in a cool vinery, but we cannot say whether you would be able to do so or not, as you appear to have had little or no experience in the culture of this plant. If we obtained a young plant we should grow it in a pot for a year; then if it made good progress in the house we should plant it in a tub or border. A compost of two-thirds very turfy peat, such as Heaths delight in, and one-third of turfy loam, with a liberal admixture of broken charcoal and silver sand, is suitable, taking particular care to provide abundance of drainage, so that copious

supplies of water can be given without rendering the soil sour. Lapa-gerias are moisture-loving plants, and do not like a very dry atmosphere.

Tree Carnations and Bouvardias (*Idem*).—Stout cuttings of the former will strike readily in a close frame having a temperature of 60° and a little bottom heat, and under good management make strong flowering plants by the autumn. Bouvardias may be cut down after flowering and started into growth in a temperature of 50° to 55°. When the young shoots are half an inch long the plants may be repotted, removing a good portion of the old soil, keeping them close until new roots take possession of the fresh compost, then affording air to promote a sturdy habit of growth. They do well in cold frames in the summer, also planted out in good soil and sheltered positions towards the end of June, and duly supplied with water in dry weather.

Market Gardening (*Grower*).—We do not advise anyone to take land near London and enter into competition with the expert market gardeners who has had little or no experience in the work of supplying Covent Garden with fruit and vegetables. Before a gardener in the country enters on an enterprise of this kind he should make himself personally acquainted with the nature of the soil and the customs of the market. The competition in the work in question is very severe, and even the most experienced growers not infrequently make mistakes in providing crops for sale when the market is glutted, and thereby incurring loss instead of gain. No doubt land can be had now—in Essex especially—at what may be termed a moderate rental, but that only means that its cultivation is not highly remunerative. Land is usually held on lease for terms and at prices to be agreed upon according to its value and position; but we must entirely decline the responsibility of advising you to invest the small sum at your disposal in the manner suggested. If after a personal investigation of the whole circumstances that bear on the matter you feel justified in carrying out your projects we shall not dissuade you, because we have known persons to succeed who have started with even less capital than you have at command, and for anything we know to the contrary you may possess the requisite cultural ability, energy, foresight, and business aptitude to succeed similarly; lacking those requisites you would almost inevitably fail. A list of Covent Garden fruit and vegetable measures may be found on page 41 of the "Gardeners' Year Book," price 1s., post free 1s. 3d. from this office.

Forcing Liliun candidum (*P. G.*).—To force this Liliun satisfactorily good bulbs should be potted during late summer or early autumn. The best time is directly after flowering and before they commence to push up their foliage, which they do almost directly the flower stems have died away. If potted before this growth takes place they become established in their pots and form a good quantity of roots before winter. They can be placed in a cold frame after potting or stood outside until the approach of frost, when they should have the protection of a frame or house from which frost can be excluded. The time they will commence throwing up their flower stems entirely depends upon the temperature they are in during the month of December; if it ranges about 45° at night they will be pushing up strongly by the beginning of the following month. After they have once commenced to throw up they will bear a temperature of 50° to 55°, but must be kept as close to the glass as possible, and where a good circulation of air can be maintained to insure a sturdy growth. Forcing must not be conducted in a close confined atmosphere, or they will draw up rapidly and weakly and fail to flower profusely, if at all. We prefer removing the plants to a cool structure directly the flower buds are formed at the extremity of the growth; if hurried when in this stage the flowers are invariably small and very deficient in substance. One good strong bulb should be placed in a 6-inch pot. When the flower spike has well advanced liberal feeding should be resorted to, giving weak applications of liquid manure frequently in preference to strong doses at wider intervals. After flowering the plants must be liberally supplied with water until the flower stems die away and new growth commences, then they should be repotted. These plants, if well attended to outside, after flowering will commence throwing up their flower spikes strongly again before autumn, and can be had in flower by Christmas and onwards in succession through January and February. This Liliun increases in both strength and size if kept in pots and generously treated after flowering. During the whole of the summer months the pots may be plunged outside, the only attention needed being plenty of water and potting or top-dressing with rich material annually.

Propagating Nepenthes (*W. L., Perth*).—In the spring, or about March, the majority of the plants will need shortening, as they are apt to become tall or straggling, which will have the effect of producing new growths at the base as well as increasing their number, and it is on these new growths that the best pitchers are formed. The parts removed may be utilised as cuttings—i.e., the firm part of the shoots, for the soft-growing points are unsuitable, it being the firm wood only that will root and push growth freely. Three at most, or, if the cuttings be scarce, two joints, are quite sufficient for a cutting. These should be placed in equal parts of fibrous peat, small charcoal or small crocks, and chopped sphagnum, with a sprinkling of sand, or they will strike freely in cocoa-nut fibre refuse, placing them in a frame where there is a brisk heat, and they will root slowly but surely. The leaves may be shortened about half or be tied up loosely. It is essential that they be kept moist. When the cuttings have rooted they should be gradually inured to the atmosphere of the house and the lessened temperature, and then transferred to larger pots, or preferably small baskets in peat fibre, suspending from the roof of the stove, giving them plenty of moisture, and keeping a sharp look-out for thrips, which, allowed to have their own way, will spoil the appearance of the plants. The plants thus cut back will produce fresh and often stronger growths if a good temperature is maintained.

Camellias Gumming (*Borderer*).—We submitted your letter to a gardener who has in his charge a collection of Camellias—splendid specimens—which for cleanliness and health are not surpassed in this country; and this is what he says on the subject:—"It is both unnatural and unusual for Camellias to gum, and our plants have not the slightest sign of gum upon them, but this was not their condition some few years ago; on the contrary, they were gummed as badly as you describe your plants to be. This gumming or glutinous substance upon the foliage and branches was entirely due to scale and mealy bug, the latter from climbers that covered

the roof, and the former that infested the plants themselves. We have but little doubt that in your case the cause of gumming is due to insects. Had you sent us a sample of foliage and wood with the glutinous substance upon them we should have been in a better position to have stated with accuracy whether this was really the cause or not. We eradicated all insects from our trees by syringing them thoroughly with petroleum and water, 1 oz. of the former being used to one gallon of the latter. Care must be taken to mix thoroughly the oil and water before it is distributed over the plants. This is best accomplished by returning with force the first syringe into the vessel containing the oil and water, and the next as quickly as possible upon the plants. This operation is best performed by keeping one man continually syringing into the vessel containing the solution, while another is syringing the plants. They should be thoroughly saturated with this solution, and not the slightest injury will result if the trees are shaded from the action of the sun until the whole of the oil has evaporated. We advise you to syringe your plants directly they have done flowering, and before they push into growth, and again in autumn directly the foliage is firm and the growth completed. Our plants are syringed with this solution annually when in the latter stage of growth, which, if there are no insects to destroy, assists wonderfully in removing any dirt that may have accumulated upon the foliage. The difference in the colour and robustness of Camellias is natural, some varieties being less luxuriant than others and possessing foliage very much lighter in colour.

Names of Plants (*Merchant*).—1, *Sparmannia africana*; 2, *Aubrietia deltoidea*; 3, *Sedum Lydium*.

COVENT GARDEN MARKET.—FEBRUARY 11TH.

MARKET very quiet, without alteration.

		s. d.		s. d.		FRUIT.		s. d.		s. d.			
Apples	½ sieve	2	6	to	4	6	Oranges	100	4	0	to	0	0
Chestnuts	bushel	16	0		0	0	Peaches	per doz.	0	0		0	0
Cobs, Kent	per 100 lbs.	55	0		0	0	Pears, kitchen ..	dozen	1	0		3	0
Currants, Red ..	½ sieve	0	0		0	0	,, dessert	dozen	2	0		6	0
,, Black	½ sieve	0	0		0	0	Pine Apples English	lb.	1	6		2	0
Figs	dozen	0	0		0	0	Plums	½ sieve	0	0		0	0
Grapes	lb.	2	0		5	0	Strawberries ..	lb.	0	0		0	0
Lemons	case	10	0		15	0	St. Michael Pines	each	3	0		7	0

VEGETABLES.

		s. d.		s. d.				s. d.		s. d.			
Artichokes	dozen	2	0	to	4	0	Mushrooms	punnet	0	0	to	1	0
Beans, Kidney ..	lb.	0	3		0	0	Mustard and Cress	punnet	0	2		0	4
Beet, Red	dozen	1	0		2	0	Onions	bunch	0	3		0	0
Broccoli	bundle	0	9		1	0	Parsley	dozen bunches	2	0		3	0
Brussels Sprouts	½ sieve	2	6		3	0	Parsnips	dozen	1	0		2	0
Cabbage	dozen	0	0		1	0	Potatoes	cwt.	4	0		5	0
Capsicums	100	1	6		2	0	,, Kidney	cwt.	4	0		5	0
Carrots	bunch	0	3		0	4	Rhubarb	bundle	0	4		0	6
Cauliflowers ..	dozen	2	0		3	0	Salsafy	bundle	1	0		0	0
Celery	bundle	1	6		2	0	Scorzouera	bundle	1	6		0	6
Coleworts	dcz. bunches	2	0		4	0	Seakale	per basket	1	0		1	6
Cucumbers	each	0	4		1	0	Shallots	lb.	0	3		0	0
Endive	dozen	1	0		2	0	Spinach	bushel	2	0		4	0
Herbs	bunch	0	2		0	0	Tomatoes .. .. .	.. .. .	0	6		1	0
Leeks	bunch	0	3		0	4	Turnips	bunch	0	4		0	0
Lettuce	dozen	1	0		1	6							



ARTIFICIAL MANURE.

AGAIN has the time come round for the application of artificial manure to grass and corn crops, and if this important work is to prove successful no time must be lost in doing it. To wait till March as we used to do is to incur a risk of failure which we are bound to avoid, and we therefore use the manure sufficiently only to ensure so far as is possible that it is dissolved or washed into the soil to dissolve gradually and spread an ample store of fertility in it. Already is the farmyard manure doing its work well upon the grass where it was carted and spread some time ago; the grass has gradually assumed that deep green hue which so clearly betokens fertility of the soil. But the action of the nitrates in the artificial manure is more rapid, and its beneficial effects are soon visible if enough rain falls after its application to dissolve the nitrate of soda and nitrate of potash. In a table showing the relative activity of manures Dr. Aitken, chemist of the Highland Agricultural Society, gives nitrates the first place in nitrogen and steamed bone flour the sixth place; and among phosphates superphosphates take the first place, while bone dust and crushed bones take the seventh or last place.

We particularly wish to render this article useful to practical men having charge of home farms, and who may not have sufficient scientific knowledge of the composition of manures to enable them to derive assistance from an elaborate essay upon it. To them we say therefore that careful experiments have shown that of the seven elements of plant food three only are important—nitrogen, phosphorus, and potassium, and the other four—sulphur, calcium, mag-

nesium, and iron, may be disregarded by farmers. This is the plain teaching of Professor Jamieson, and we have repeatedly followed his advice and proved him to be a safe guide. His formulæ for various crops have proved so valuable that we give them here in full:—

FOR GRASS CROP (PER ACRE).

$\frac{1}{4}$ cwt. nitrate of potash	$\frac{1}{2}$ cwt. mineral superphosphate
$\frac{1}{4}$ cwt. nitrate of soda	$\frac{1}{2}$ cwt. steamed bone flour

(The mixture for grass is intended to be applied yearly.)

FOR GRAIN CROP (PER ACRE).

$\frac{1}{2}$ cwt. nitrate of potash	$\frac{1}{2}$ cwt. steamed bone flour
$1\frac{1}{2}$ cwt. nitrate of soda	$\frac{1}{2}$ cwt. ground coprolite

In the case of the Wheat crop one-half of the mixture should be given in autumn, and the other half in spring. Other autumn-sown corn crops are treated in the same way advantageously. Our winter Oats had the half dressing when sown in October, and the plant now looks exceedingly well.

FOR ROOT CROP (PER ACRE).

$\frac{3}{4}$ cwt. nitrate of potash	$2\frac{1}{2}$ cwt. ground coprolite
$\frac{1}{2}$ cwt. nitrate of soda	10 tons farmyard manure
$2\frac{1}{2}$ cwt. steamed bone flour	

If no farmyard manure is available the artificial mixture for roots should be doubled.

We give the prescription for roots with the others advisedly, because it is decidedly advantageous to procure the whole supply of manure for the season at the same time, the rate per ton being much less than it is for lesser quantities. We have pointed this out to tenant farmers, and recommended them to combine and give one large order, and so effect a considerable saving. Each kind of manure should be had separately, the weighing and mixing being done at the farm, and then we have a mixture free from adulteration and as pure as it is possible to have it. Need we again point out the advantage—the economy of this plan—in comparison with the old easy-going practice of buying dealers' specialities? Well has Professor Jamieson said that the farmer's eyes would be opened if he would lay his manure bill before a chemist, and ask him to calculate how much he had paid for useless or hurtful ingredients.

The quantities given for the grass land enable it to yield a fair average crop, but when poor grass land is taken in hand double the quantity of manure is not too much, the outlay being 72s. as compared with 36s. for an ordinary dressing. We tried a double quantity both upon meadow and rye grass last year, and the result fully justified the extra cost. The wiser course probably in view of a permanent improvement of poor grass land would be to give an ordinary dressing of the mixed manures and with it 10 ewt. per acre of half-inch bones. This would of course involve a greater immediate outlay, but it would be an outlay for the future, the slow decay of the bones proving beneficial to the land for several years. We have a seven-acre meadow which was so treated some years ago, and subsequently with the ordinary annual dressings of artificial manure excellent crops of grass have always been had. Much prejudice still exists in favour of farmyard manure, and for root crops the 65 to 80 per cent. of water contained in it is of especial value in a hot dry summer; but used as a top-dressing for grass that high percentage of water certainly appears useless, for most of it passes by evaporation into the air. Let it be clearly understood that the fertility of a ton of farmyard manure consists in from 9 to 15 lbs. of nitrogen, the same quantity of potash, and 4 to 9 lbs. of phosphoric acid. If we could we certainly should use nothing but artificial manure upon grass land.

WORK ON THE HOME FARM.

Live Stock.—Where sheep-folding on Turnips is still practised at this season of the year the recent heavy rain will have caused the folds to be about the most unsuitable places for the sheep that could be found. When they are kept week after week confined in folds so muddy and wet that at times they are unable to lie down can we wonder at an outbreak of foot-rot? Let us have more permanent pasture on which our flocks may winter, more sound roads upon farms, so that the carting of roots may be an easy matter. Our object in folding is twofold—to manure the land and to fatten the sheep. Rather, much rather, would we do this upon sound grass land, and instead of trampling the arable land into a puddle which requires weeks of fine weather to make it dry we would apply artificial manure to it, or manure it with green crops later on in summer. The mild weather is favourable for early lambs, and as we entered our lambing quarters this morning the shelter of a high hedge along the north and east sides and bright sunshine rendered the air soft and balmy. The meadow lies high, and its surface slopes gently downwards to the south-west, so that the position is most favourable for the health of both ewes and lambs.

Upon home farms it is customary to try and have some cows to calve during winter in order to keep up as good a supply of sweet fresh butter as possible. Upon dairy farms generally calving has now begun, and with ordinary care there will be very little trouble. Avoid nostrums. Very wonderful are the compounds which are still given to cows at calving. If they contain no drugs little if any harm follows; but it is time all such nonsense is at an end. Abortion and difficulty in calving are not often things of a moment, for we then probably witness the baneful effects of

injury or fright caused some time previously. Cows require quiet kindly treatment at all times, careful feeding, a cessation of milking fully six weeks before the calving, a large roomy box or lodge for the calving, warm bran mash, and no cold water for three days after calving, but no medicine whatever of any kind, unless there is swollen udder, symptoms of fever, or straining; then, and then only, a dose or two of half a pound of Epsom salts does good, and it may be necessary to soothe and stop the straining by the use of oil and carbolic acid. Very seldom indeed is it that we are obliged to have recourse to such remedies, for a healthy cow that is kept constantly in that sleek condition which is the best possible medium between fat and lean stock, and has gentle kindly treatment, is pretty sure to "have a good time," and to give no extra trouble.

OUR LETTER BOX.

Kerry Cows (J. S.).—Kerry cows are undoubtedly profitable, excellent for the dairy, yielding milk rich in cream, which makes butter of the highest quality. They are small, hardy, gentle, kindly animals, easily fattened; barren cows only requiring a summer run upon grass to become ripe for the butcher, and are therefore inexpensive in comparison with the more delicate Channel Island cattle. But the formation of a herd of really good cows is a work of time, there being always considerable difference in the milking qualities of imported heifers. We were once so fortunate as to purchase one which gave sixteen quarts of rich milk daily, but then others purchased with it gave much less. Unless you are prepared to pay a high price for cows of proved excellence you must proceed by selection, purchasing imported cows or heifers in calf, keeping the good ones to breed from and passing the inferior milkers on to the butcher. The best herds of this or any other breed are generally the descendants of one cow, and it may be said to require half a lifetime to form one. You can, however, soon get together enough useful cows for the supply of an ordinary dairy; till you have done so do not part with the cows which you already have, but let the change be so gradual that no inconvenience may arise from any break in the regular supply of milk and butter.

Abortion (R. C.).—Excitement, fright, being driven or knocked about by other cows, walking through deep mud or a yielding mass of soft sodden litter, slipping or falling down, drinking very cold or foul water, eating frozen roots. These are some of the causes of abortion or calf-slipping. When this happens to a young cow it is liable to become habitual, and the cow should be fattened and sold. As your cow is eight or nine years old we think you may venture to try her again, and see that she is not bullied or driven about by other cows, nor exposed to heavy rain or cold windy weather. Alderneys and Jerseys are weak delicate animals, requiring much care and kind treatment. Your treatment of the cow was quite right. Your cleansing drink is worthless, and should be discarded. Nothing of the kind is required by a cow at calving. Give warm—not hot—bran mashes for three days, keep it from cold water for that length of time, and on the fourth day it may safely revert to its ordinary food. If after calving the cow is feverish and its udder becomes hard, a dose of half a pound of Epsom salts dissolved in warm water is a safe cooling drink. If there is any apparent risk of milk fever a veterinary surgeon should at once be called in.

Hard Butter (A. K. C.).—Mangold is certainly not the cause of butter being hard or coming in the churn in fragments. It is at this season of the year, when cows have been long in milk and the time for a cessation of milking for the rest before calving is close at hand, that complaints similar to yours as to the hardness of butter are very prevalent. It is generally found that by pouring cold water into the churn just at the time when the butter is about to gather, and lowering the contents to about 54°, that the butter does not mass together, but remains in pieces like small peas, and the lower the temperature the smaller will be the pieces, while at a temperature of 60° to 70° they mass together. Professor Sheldon considers the use of cold water desirable. If it is so used special pains must be taken with the working of the butter—preferably by a butter worker.

Artificial Manure for Grass Land (F. Y.).—Our article upon this subject will afford all the information you require about manures and bones. A dressing of wood ashes twenty bushels to the acre will re-invigorate the Clover and cause it to spread quickly and grow so strongly as to be conspicuous among the grass. If you have to sow Clover again with grass for permanent pasture sow a pound each of Yarrow (*Achillea millefolium*), Cow Grass (*Trifolium pratense perenne*), Alsike (*Trifolium hybridum*), Perennial White Clover (*Trifolium repens*).

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain
	Baromet- er at 324 and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature		
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1885. February.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
Sunday 1	29.206	42.3	42.0	S.W.	41.8	49.2	41.7	59.0	38.8	0.191
Monday 2	29.271	50.2	45.9	S.	41.8	54.0	40.8	71.4	36.5	0.058
Tuesday 3	29.246	44.7	42.3	S.	42.0	49.0	41.2	59.2	35.4	0.010
Wednesday .. 4	29.416	41.2	40.2	S.	41.2	46.8	33.4	59.2	26.8	0.309
Thursday 5	29.360	39.8	37.2	S.E.	40.4	48.2	31.8	66.4	26.1	—
Friday 6	29.815	42.4	39.7	S.	39.6	47.7	34.8	58.2	27.8	0.159
Saturday 7	29.655	44.8	42.3	S.	40.5	50.9	41.5	69.6	34.7	—
	29.424	43.5	41.4		41.0	49.4	37.9	63.3	32.3	0.727

REMARKS.

- 1st.—Wet till 10.45 A.M., fine afternoon, wet and windy evening.
- 2nd.—Dull early, windy, then bright; afternoon very wet; bright night.
- 3rd.—Generally fine, but threatening rain after 4 P.M.; fine night.
- 4th.—Fair early, fine mid-day, very heavy rain 5 to 7.30 P.M.
- 5th.—Fine early, shower at 10 A.M., fine afterwards with sun.
- 6th.—Fine morning, dull afternoon, wet gusty evening.
- 7th.—Generally fine.

Another mild week, more like April than the early part of February.—G. J. SIMONS.



COMING EVENTS

19	TH	Royal Society at 4.30 P.M. Linnean Society at 8 P.M.
20	F	
21	S	
22	SUN	1ST SUNDAY IN LENT.
23	M	Royal Geographical Society at 8.30 P.M.
24	TU	
25	W	Society of Arts at 8 P.M.

ARE OUR VEGETABLES IMPROVING?

IN my opinion they certainly are, and cultivators who are inclined to direct their labours to the growth of the good old varieties of twenty years ago may rest assured that they are not making the most of their opportunities. Complaints are frequently heard of multiplying the names of vegetables without improving their qualities, and there may be much of this, but there is no lack of new and improved varieties of our leading vegetables. Indeed it would be strange if so much skill and attention were devoted to their improvement without anything being accomplished. We all know that many new vegetables have been introduced which were not of superior merit, but it is equally certain that advancement has been made, and many vegetables brought to a perfection which was never dreamed of twenty years ago. It is often said that vegetables have now become so numerous that it must be difficult for many to select the best, and there is some truth in this, but no one who reads need be at a loss what to grow, as the merits and demerits of all are discussed in a way which forms a ready guide to their value.

Probably Peas have had as much attention in efforts to improve them as any vegetable, and it is only right that this should be so, as they are a most important crop, grown everywhere, and appreciated by all. Mr. Laxton's Peas and Mr. Culverwell's are earlier, hardier, more prolific, and of better quality than any known before their time. Mr. Abbott is following in their footsteps. Messrs. Carter have been fortunate in being the means of popularising many good Peas, and Messrs. Webb of Stourbridge; Veitch, London; Sutton, Reading; and Sharpe, Sleaford, are prominent in the same way. Earliest of All, Giant Marrow, Telegraph, Paragon, Stratagem, Duke of Albany, Latest of All, Gladiator, American Wonder, Sturdy, Wordsley Wonder, Sunrise, and Perpetual Bearer are a few of the new Peas which have outdistanced old varieties.

The improvement effected in Tomatoes is very great, and we need go no further to prove it than by naming such handsome sorts as Hackwood Park Prolific, Sutton's Reading Perfection, with Carter's Dedham Favourite and Greengage. Those have put the old sorts in the background and also the American varieties, which were the most promising at one time. Amongst Beans of the runner section we have a wonderful variety in Laxton's Girtford Giant, and amongst the broad varieties Carter's Leviathan is similar, while dwarf sorts are well to the fore in Canadian Wonder and Cooling's Ne Plus Ultra. In Cauliflowers we have Veitch's Pearl, Extra Early, and Autumn Giant, all splendid varieties, closely followed by more modern ones, such as Webb's Mammoth, Sutton's King, and Eclipse. Chou de Burghley is a capital addition to improved vegetables. In Broccoli we have Veitch's Autumn Protecting variety, Backhouse's Winter White, Cooling's Matchless, Sutton's Winter Mammoth, and Sutton's Late Queen, which produce heads of the highest quality in certain succession from November

until June. Of Cabbages there are several first-rate new varieties, such as Ellam's Dwarf Early Spring, Webb's Emperor, Wheeler's Imperial, and Carter's Miniature Drum-head. Gilbert's Universal Savoy is the latest addition to this class, and it has only to be grown once to prove how very superior it is.

Cucumbers have been keeping pace with other vegetables. Pettigrew's Cardiff Castle is very useful, Tender and True is a splendid fruiting variety for summer use. Lettuce and Endive now assume a size and possess a tenderness when matured quite unknown in former days. Endive Round-leaved Batavian, and Lettuces Perfect Gem, Marvel, Summerhill, Kingsholm, Little Queen, Northern King, and several others are valuable. Leeks have been brought to an enormous size, and The Lyon is the latest improvement. Onions have had attention, and have amply repaid it, as will be readily admitted by all who have grown Webb's Improved Banbury, Reading Improved, Giant Zittau, Rousham Park Hero, Golden Globe, and Golden Queen. As a garnishing Parsley Carter's Fern-leaved variety is exquisite. Radishes are very numerous, and further, the newer ones are very good. They are produced in many colours and forms, and are both attractive and useful. Sutton's Earliest Frame, Carter's Holborn Crimson Marble, the new Crimson French Breakfast and the new China Rose are excellent. Turnips are now brought to great perfection. The new Milan variety is the earliest Turnip known, Sutton's Snowball is a beauty, Veitch's Red Globe is most valuable, and Carter's Jersey Lily is fine in every respect.

Vegetable Marrows are as good as can be desired, and Potatoes were certainly never so fine. I wonder what gardeners would think nowadays had they to be contented with such as the Rock and Regent? Good Potatoes in their way, but nothing as early or heavy-cropping varieties. Of Kidneys we have Veitch's Improved Ashleaf, Covent Garden Perfection, Magnum Bonum, Snowdrop; and of rounds we have Reading Hero, Schoolmaster, Reading Russet, and Webb's Reliance.

In these brief notes I have only named varieties of recent introduction which I know to be improvements on their predecessors, and all that their raisers and distributors claim for them. New vegetables are often thought to be expensive, but although higher in price than common and inferior varieties, they really are not dear, as the excellence and quantity of the produce in the end amply compensate for the first outlay.—A KITCHEN GARDENER.

VIOLETS.

THE Violet is beyond doubt a general favourite. Poets for ages have extolled its praises, an emblem of modesty and sweetness. Common although it be, even the wild Violet has its charms, and many a wayfarer's heart has been gladdened at the sight of a batch clustering beneath the sheltering stump of a Hazel or an Ash, by the side of a wood or country lane.

"Full against the morning sun,
Of heavenly blue, there Violets grew,
His hand invited one by one."

If the wild Violet with its scant perfume has such a firm hold on our affections, it is not surprising that the more richly perfumed and deeper-coloured cultivated varieties should be so highly prized. Every garden of whatever pretensions has, or should have, a Violet bed or clump, and many where circumstances admit grow them under the protection of frames or pits for a winter supply of flowers, the time they are more especially valued. Still it is a singular fact in the cultivation of the Violet, whether it be the common single ones or the choicer double varieties, that although there are some gardens where they grow without any trouble, there are others where they usually fail. A frequent complaint is heard that they will not grow, and the

sight of the flowers of the Czar and Russian varieties, as they are paraded and sold in the streets by the vendors from the markets in the autumn and early spring months, is often the cause of a gentle hint in this way, "If they can grow them, how is it we cannot?"

From many years' observation and judging by my own experience, I think the majority of the failures to get an early supply of flowers arises from lack of attention at a particularly busy time with the gardener, when the rush of work often compels something to be put off until to-morrow—that is in the busy spring months, after the flowering time of the Violets. The secret of success to obtain autumn and winter flowers lies in the treatment, or the want of treatment, the plantations receive at this time, and I have thought a seasonable hint now would perhaps be appreciated by some who have not been so successful as they would wish to be.

The plan of cultivation I adopt, and used to adopt elsewhere on a much larger scale than I can at the present, I will briefly describe. All the varieties, both double and single, succeed with the following treatment, except the double blue Tree Violet (*arborea*). This is a slow grower, and not so easily perpetuated as the others. We will suppose the stock of plants to be prepared for the next year's supply to have just finished flowering. Whether they have been grown in pots, planted out in frames, out of doors in some part of the garden, or just brought in from the nursery, I should recommend them to be stripped with the thumb and fingers to single crowns or stems, trimming off any loose runners they may have made recently, and place them on one side. They should then be planted in a border that had been previously prepared. If the soil is friable and light I should select a border in the kitchen garden facing north or north-west, or failing that I would select the most moist and coolest part.

In the month of April dig in and well incorporate some decayed manure and leaf mould in equal parts, then tread it firmly if in good condition, and plant the crowns singly in rows 1 foot apart and 9 inches from plant to plant in the rows; press down firmly, and water in with a rose on the can. If the soil be tenacious and heavy choose an open strip, and through the winter months well work in abundance of half-decayed leaves, sweeping from the paths sinder ashes and other garden refuse. Keep to the same plot every year and make a Violet border of it, and in a few years it will be much improved in texture.

If drying winds should prevail two or three waterings will be needed until the new roots take to the soil. In exceptionally dry soils or seasons they would be much benefited with a good watering at intervals throughout the hot summer months, choosing the evening for watering; but I have invariably found that when the new roots take to the soil that is underneath them they have sufficient to sustain them through the summer, and will have formed good hard ripe crowns by the time the autumn rains commence, which is generally about the second week in August. In the cool days of September and October they will develop their flowering buds, and the Czar and Russians will flower freely.

If required for frames or pits prepare the places by filling them with some half-decayed leaves or manure to within 1 foot of the lights, treading it firmly. Then cover the bed with 3 or 4 inches depth of old potting soil or well-decayed leaf soil. Lift the plants carefully by cutting well round them with a sharp trowel; secure them with a good ball of soil attached and transfer them to the frames, leaving about 3 inches of space around each plant. Trim off any straggling runners, and if required for stock cut a shallow trench and plant like Box edging. Tread firmly, and in the following spring these will make good stock for pulling to pieces and planting as advised. The plants in the frames should be pressed firmly in the soil and receive a good watering. They would also be benefited and the flowers kept cleaner if the surface of the soil is slightly covered

with a dressing of new cocoa-nut fibre. This is especially beneficial to the double varieties, as the flowers are heavier and more likely to be spoiled by contact with the earth than the single varieties. Ventilate on all mild days, protect with covering from sharp frosts, and I venture to predict that the flowers obtained will more than pay for the extra trouble. In the spring after flowering is over divide and replant as before. I may say that I never found any need for a change of quarters for the planting-out. There is generally one place in the garden more suitable than another for them, and I should keep to it, manuring and digging it in the winter or spring months before planting.

The varieties that I have found answer well with the above treatment were the following:—The double Neapolitan for the main batch in frames with a few of the Czars and Russians for earlier work; the double Blue (*arborea*) I had a limited stock of, but they used to be planted out whole, as mentioned above.

At the present time here I have adopted and grown the double Marie Louise, giving it the above treatment, and have found it a great improvement on the Neapolitan in its constitution. It is more floriferous, very sweet, having stouter flower stems, and larger fuller flowers. It is also deeper in colour, but that is only of secondary importance, as many would admire the lovely neutral tint of the Neapolitans. I have not tried the new double white Count Brazza, but I am much impressed with it, and intend to make it a companion to Marie Louise for frame. For out-of-door culture for any of the varieties I should recommend making a new bed every spring in the manner described above, destroying part of the old ones, and thus keeping up a succession. The newly made beds will flower in the autumn and winter, and the others will continue the supply in the spring.—C. ORCHARD.

TRENCHING GROUND.

THE lively interest which has been shown in this discussion since it was started in December by your fluent and sprightly correspondent, Mr. Iggulden, is sufficient evidence of its importance, and the varied opinions that have been expressed show very plainly that a full discussion of the subject cannot fail to be attended with much good. Some of us have hitherto had but crude and undefined notions respecting it, we are therefore especially indebted to Mr. Iggulden, not only for originating it, but also for the racy and pleasant, although at times somewhat erratic manner in which he has argued it. His meaning, it is true, has not at times been quite clear, or my comprehension may have been cloudy; anyway, I was not quite certain at times if he was not going to condemn trenching altogether as a useless and expensive pastime, while at others there appeared equal probability that he was changing his creed, and would shortly become converted to a better and sounder faith. Had he commenced his task on a slightly altered, may I say improved basis, that task would perhaps have been less difficult, even to his fertile mind and ready pen. His opening sentence, "In some cases, no doubt, the advice to trench is sound enough, but more often not," was, if we may judge from the exceptions, to which he somewhat frequently treats us throughout the discussion, rather unadvisedly chosen. Had this sentence read, "In many cases, no doubt, the advice to trench is sound enough, but sometimes not," the ground on which he trod would have been firmer and better prepared, and his slipping and stumbling afterwards less frequent. He says, "Whether trenching in any form will be beneficial depends entirely upon the depth of the surface soil, the nature of the subsoil, and the way in which it is performed." He then refers to several instances in which he quite agrees "that the operation of trenching may be beneficial, even in a chemical sense, not only by the mixture and amalgamation of different soils, but also their incorporation with the varied manures with which the land may be charged."

This is all very logical, and in perfect accord with past experience, sound theory, and good practice, but when we are treated to the mechanical side of the question there does not appear to be that clear and accurate reasoning which at times flashes out so conspicuously. He says, "I may be told that by deep digging we facilitate the drainage of the land; that by loosening the soil to a greater depth we facilitate the percolation of the water as it falls, and that, as the air follows the water, it, in its turn,

effects the disintegration of the subsoil, thereby liberating various mineral foods." Again, "According to my experience, whether the ground is well drained or not depends entirely upon the number and disposition of the pipe drains; newly trenched ground is the most absorbent and worse drained, while land that has not been dug, say for twelve months, naturally drains the best, and is therefore the warmest." This reads well, and there can be no possible objection to the pipe drains for carrying off the surplus subsoil water in such land, but why complain of that which the loosened soil holds in suspension? Is not this, even in clay soils, an index of good rather than evil? and is it not the absence of that power in soils to absorb this precious element that makes it less fertile? As to its temperature, is not this in deeply trenched land, where subsoil water can freely pass off, more quickly and more permanently increased by the sun's rays than when in an untrenched undug condition, in which state Mr. Iggulden seems to regard with so much favour? The difference in temperature in each case at midwinter, when the sun's power is feeble, will certainly not be great, and maybe for a short time slightly in favour of the untrenched ground, but as that power increases the temperature of the loosened clay will quickly improve, while that of the untrenched, undisturbed land, will remain almost unaltered, and while the rapid evaporation from the rough loosened surface of the deeply trenched ground will quickly render it friable and healthy, the untrenched or shallow-worked soil will remain hard, cold, and impervious alike to rain and the sun's rays. No doubt it is near the surface that the majority of the roots of many plants we cultivate thrive best, but this scarcely disproves the fact that those roots which have a downward tendency are equally essential to the well-doing of the plant, and to neglect their wants by leaving the subsoil untrenched and unprepared for their reception is scarcely consistent with reason. To say that these roots may by surface cultivation only be retained near the surface, is contrary to fact; they will, whether we wish it or not, penetrate to almost unknown depths, and for what other purpose than to sustain that vigour in the plant that the surface roots cannot in dry weather accomplish?

Some years ago, when located on a clay soil, I had an opportunity of observing the depth to which the roots of many plants will grow, even in that which is often termed ungenial soil. The land, a heavy clay, had been thoroughly drained some years previously to a depth of about 4 feet. The subsoil had been annually brought to the surface in such small quantities at a time as would allow of its being thoroughly pulverised by the weather. By this gradual process, and the liberal dressing of lime, sand, burnt earth, and similar additions, it had become thoroughly amalgamated and fairly workable to a depth of 3 feet. The fertility of this land was so infinitely superior to that of the land surrounding it, which was, although drained in precisely the same manner, only cultivated one spit deep, that it was considered not unreasonable to charge the person who occupied it one-third more rent, which was cheerfully paid by the occupier, because he felt assured that this extra charge was greatly counterbalanced by the extra amount of produce he obtained from it. I have frequently dug down in order to discover to what depths the roots of the various crops descended in this soil, and often found the fibres of Wheat, Carrots, Parsnips, Radishes, Cabbages, Broccoli, as well as those of fruit trees, at a depth of 4 and even 5 feet from the surface. It may be said that these roots would have been better nearer the surface, but results proved the contrary.

In thoroughly drained, judiciously trenched, well-cultivated soil, the roots of vegetables cannot and will not grow too deeply, nor will those of fruit trees. It is not the depth they penetrate under such conditions that does the mischief, but as the Rev. Canon Hole would say about Roses, it is the wrong kind of muck and the half-hearted cultivation which spares the sinews and sacrifices the pocket, that is at fault. Deep digging and deep trenching in good thoroughly trenched land, always did, and will continue to pay, and more than repay the extra cost in labour, but, to be profitable, it must be judiciously and gradually performed, so as never to bring more to the surface at one time than can be well pulverised by the weather during the autumn, winter, and spring seasons. The temperature at midsummer in such well-drained, well-trenched land is at 3 feet deep 60°, or about 2° colder than that at 12 inches deep, while in the winter and spring seasons it is slightly the warmest at the lower level. In undrained, untrenched land, these conditions are greatly changed, and the temperature at the lower level would not reach 50° even in the hottest summers, while the mean temperatures would not exceed 43°. These diverse conditions are, I think, sufficient of themselves to account for the fact that vegetables and fruit trees will succeed, well or ill, on the same land. Stiff marly subsoils require even more care in trenching than clays, while

those composed of chalk and gravel are perhaps better left undisturbed.

Mr. Iggulden further says, "It is near the surface where the fibres are formed. We are told that certain plants will root to a particular depth, but is this deep root-action to their advantage, even supposing food is placed for them at that same depth?" Now I am not aware that it has been proved that fibrous roots are confined exclusively to the surface. Many trees do form roots near the surface because it is their nature to do so, but that is no reason why fibrous roots cannot as easily be formed 3 or 4 feet deep, provided the mechanical condition of the soil is such as to cause them to be produced. In short, I remember once having seen a well-drained, firmly made Vine border, 5 feet deep, where the fibrous roots were in a perfect mat at the base of the border, as well as at the surface. I have also just seen the fibrous roots of an aged and prolific Pear tree completely filling a small brick vault 6 feet deep, where the soil had been mixed with a quantity of brick rubble, which had no doubt offered that resistance necessary to cause their production. With such examples ought we to take for granted that "90 per cent of the fruit trees planted are ruined from deep root-action?" Why should deep root-action injure any fruit tree, much less vegetables? I cannot help thinking, Mr. Editor, that we are getting just a little on the wrong track with this shallow-rooting, shallow cultivation theory, and we should often do wisely to recollect and act upon the terse advice given by Jethro Tull, "Dig deeper, my boy, if you wish to find the gold."—VITISATOR.

HERBACEOUS PÆONIES.

WHAT grand old-fashioned flowers these are! and what have we in the hardy flower garden that can equal their gorgeous globular heads of flowers? These highly attractive early summer-flowering plants are most useful for the shrubbery border, for the back row in the mixed border, or for massing in beds; in fact, any sunny position. The colours range from the purest white, through shades of flesh and rose, extending into purple, crimsons of the most intense hue, magenta, and lake. The colours, in fact, are so varied that they are puzzling to describe. Hardy in the extreme, free and stately in habit, and producing in profusion their massive flower heads, many of which are highly fragrant, should be sufficient recommendation to find for them a place in all gardens, and especially amongst hardy plants.

To do the Pæony justice, the soil should be deeply dug or even trenched, and well manured; any ordinary garden soil will suit them, and it is almost impossible to make it too rich. Notwithstanding that all these good qualities with easy and simple culture are in favour of their extensive cultivation, still it is rare that we meet with even a small collection of them in private gardens. Let us hope, however, that as hardy plants generally are now receiving a greater share of attention than they did a few years ago, that the herbaceous Pæonies will at the same time be duly appreciated, and that deservedly. Those who would wish to engage in their cultivation I would urge to lose no time in procuring plants and getting them in their respective places. No time could be better than the present, provided the ground is not rendered unfit for planting operations by heavy rains.

In common with all other florists' flowers, the varieties of these Pæonies are numerous and in many cases very similar in colour, so that with a view to assist those who might wish for a distinct series of these exquisite border flowers I will endeavour to give some of the most distinct and handsome. At the same time I might suggest that those desirous of forming a selection of them would do well to leave the choice to the nurseryman, who is not always in a position to supply certain kinds for which the demand exceeds the supply. Probably one of the most striking and effective, and certainly the most often seen, especially so in country cottage gardens, is the old double crimson, *P. officinalis* fl.-pl., which is much earlier than the majority of the herbaceous section and one which requires no words of mine to tell of its usefulness. For convenience I will roughly group them together with their predominant colours. Among pure whites *Boule de Neige*, *Candidissima plena*, *Alba sulphurea*, *La Vestale*, and *Virgo Marie* are the best. The first named is sometimes dashed with carmine in the centre; the last named is a charming, soft, pleasing white, most chaste and beautiful. Those with flesh-coloured flowers are *Marie d'Hour*, *Marie Stuart*, *Rani Demay*, *Madame Bollet*, and *Eugénie Verdier*. These are exquisite shades of flesh, and have a strong semblance to the delicate satiny markings of the German Irises. Among rose-coloured forms are *Rose d'Amour*, *Pulcherrima*, *Madame Chaumy*, *Oberlin*, *Madame Raquez*, and *Vicomte de Forceville*, the last-named very fine. The shades of pink, though running too close to the rose-coloured forms to prove distinct, contain many beautiful and pleasing

shades. Then we come to the crimsons, in which may be included the shades of magenta and lake, and so avoid making too many groups of colours. Among these is a dazzling red variety called Victor Lemoine, a superb flower; Sœur d'Auguste Miellez, crimson purple; Louis Van Houtte, bright purple cerise; Surpass Pottsi, purple crimson, large and very double; Henry Demay, flowers brilliant purplish crimson; Gloire de Douai, a fine deep crimson, flowers semi-double and exhibiting its cluster of golden anthers in centre, which make up a most conspicuous flower. François Ortegat is another semi-double variety with crimson purple flowers; and Atrosanguinea, a brilliant crimson suffused with purple, flowers very large and full.

Beyond those named there are innumerable shades of rosy ilac, salmon, sulphur, and creamy whites, with rosy carmine and peach, to say nothing of various whites with varying shades of rose, pink, and flesh, all beautiful in themselves, and grand ornaments for the embellishment of our gardens in summer time. To close this brief note of so fine a group of decorative plants without mentioning the variety known as *P. tenuifolia* fl.-pl. would be unjust, seeing it is so distinct and so choice, indeed it is unequalled; its large heads of bright crimson flowers and its elegant linear leaves, in all about 20 inches in height, fit it for association with even the choicest border perennials. As a pot plant it is suitable either for conservatory decoration or for exhibition; in fact, anywhere when well grown it is a most telling plant and one which cannot be too strongly recommended. The majority of the species are natives of Siberia, China, and Southern Europe, while for many fine forms we are indebted to the enterprise of continental florists.—J. H. E.

LORD NAPIER NECTARINE IN AMERICA.

I HAD not seen the Journal for two years, until January 1885, when I was glad to find that it was still in such good condition. For fifteen years I looked for it every Thursday night, and when I came here I missed my old friend very much. A happy New Year to you, Mr. Editor, the same to "Wiltshire Rector," and convey the same to Messrs. L. Castle, W. Iggulden, and all those who have helped me out of many a difficulty.

The chief object of my writing now is to discuss a point with Mr. Muir, *Margam*, concerning Lord Napier Nectarine. I have grown this Nectarine in pots, and ripened the fruits out of doors, and was very satisfied with the returns given. Two years ago I built a lean-to house, and among other trees ordered from England were two Lord Napiers, both on Plum stocks 4 feet high. One was planted near the back wall and the other near the front. Last year (1884) when the trees were in flower, we had our ordinary spring fogs off the sea, but by the aid of a camel-hair brush I had a very fair set throughout. On a tree of Rivers' Early there were three dozen and five, of Grosse Mignonne two dozen and ten, of Lord Napier on the front also ten dozen and three. Not expecting to hear anything about Lord Napier's bad qualities, I did not note much about it, but I should describe it as a weak grower, large-flowering, free setter, medium size, high colour, and second-rate flavour. When they went on to the table they looked splendid. I am very glad that I have two trees of it. I intend to work some for out of doors. I question if Mr. Muir has the right sort. We have one here about the same size and colour, that if a good Turnip and it were set before me, I would take the Turnip and leave the Nectarine for someone else.—R. LEWIS, *Rhode Island, U.S., America.*

MUSHROOM FAILURES AND SUCCESSES.

MR. J. WRIGHT'S most interesting account of the Mushroom "gold fields" doubtless stimulated not a few gardeners and others to try their prentice or seasoned hands on Mushroom culture.

After studying his little book my stomach soon yearned for Mushrooms, and the path was so easy, success appeared so assured, that the desire and determination to grow were simultaneous. Beginning with my own stable, I interdicted all physic, and the droppings were duly collected and prepared. Here, however, came my first error—that of omission to take sufficient of the short soiled straw. The result of this omission was that my bed did not appear to heat much. My first attempt was in the open on a bed built as directed, about 12 feet long. My garden being divided by a poor hedge from a lane not a few of the labourers passing, seeing the process of building, marvelled at the elevation, and when my back was turned inquired what we were going to grow there. They were not further enlightened than by being informed that "master was going to try some new sort of seeds." The wonderment rather increased than diminished when it was covered with litter, and the weather being cold, wattled hurdles lined with straw followed. As I have said, the heating of the bed was not very successful, and at the end of six weeks, seeing no signs of coming dishes of the delicious fungus, I marked the same as failure No. 1, and had almost given orders for the breaking-up of the bed. About eight weeks after spawning, however, my man called my attention to the bed by ex-

claiming, "Mushrooms be coming up as thick as Hops now, sir." I was quickly at his side, and truly very pretty looked the little patches of small white spots, the largest no larger than a pea. It made me fancy that the manna of the Israelites must have looked like this.

Mrs. Y. B. A. Z. had predicted failures; Mushrooms were such curious things, they would never come if they were looked for, &c. I went down to my house (this garden is some distance from the house). I did not actually crow in the street, but I crowed vigorously indoors, and saying, "Ah! who said we could not grow Mushrooms? who said she did not care what Wright said, for that Wright would be wrong?" Inwardly I had already sent away baskets of Mushrooms in theory, for after all there is no greater pleasure in obtaining anything than is the pleasure contained in giving it to those who do not possess it. Ah me! a few days later I removed the wrappings to look at the little pictures growing and swelling. What a change! Instead of the myriads of little white spots only here and there a speck. Where were they gone? What had happened? After examining the litter I came to the conclusion that all the vermin in the garden believed that the erection was intended for their special benefit, and had acted accordingly. The litter was swarming with slugs, woodlice, &c.; in fact, some stanzas of Hood's "Haunted House," slightly shifted, would describe the scene.

"The slug was crawling on the vacant chair,
The snail upon the settle.

"The centipede along the threshold crept,
The cobweb hung across in mazy tangle;
And in its winding sheet the maggot slept
At every nook and angle.

"The woodlouse dropped and rolled into a ball,
Touch'd by some impulse occult or mechanic;
And nameless beetles ran along the wall
In universal panic."

Well, that day I did not crow as I returned from the garden. I explained that accidents would happen even in the best regulated gardens, and that I believed that a monster gathering of Mushrooms had been held on the downs, and that all ours had departed to be present. I ordered all the litter to be cleared away; the bed was well dusted with lime, and we did cut seven Mushrooms from that bed. I had succeeded so far in growing Mushrooms, as there was more than one. I thought surely they will yet come, and I left the bed, but they did not. This garden has a bank and hedge round three sides of it, and slugs and woodlice do revel in it.

After this success (?) I returned to Wright's little book. To be sure, he had warned us against these intruders, and suggests arsenic for one of them, but I am not fond of putting this about on things eatable. Having thought over this I came to the conclusion that a small patch similar to mine in a garden that like Mrs. Poyter's house "possessed all the plagues of Egypt" was too great a temptation to vermin. Of course, you must, as in the matter of Turnip-sowing, sow enough for the fly as well as yourself, and I saw no prospect of being able to devote sufficient space for this purpose.

My next effort then was in a sort of stable. Here I made against the wall a bed about 15 inches deep and 2 feet wide. This time I followed Mr. Cutbush's advice, and covered the spawn at once with earth. I found soon after that the covering over the bed of litter had woodlice in it, so I had it cleared away. In due course, and much earlier than in my trial out of doors, the small white specks appeared. I now watched closely and found some disappearing, and found also woodlice, but by the aid of salt sprinkled over the bed this enemy was checked or appeared to be, and a fair quantity of splendid Mushrooms were cut of flavour, as it appeared to most of us, far surpassing the ordinary specimens. The size of them made two or three sufficient for a meal, and one that was exceptional, at least to us, measured 27 inches round. This one I sent away, five or six persons in the household partook of it, and the verdict was very much in its favour. Still, between the woodlice and what I suppose was the fungus (*Xylaria vaporaria*) the quantity did not equal the quality. A large proportion did "go off" in the way mentioned by Mr. Wright, becoming soft and brown, whilst the size of horse Beans, and declining to "move on" to the summons of any gardening police. This disease would appear to affect Mushrooms under cover and not in the open.

The popular impression is that Mushrooms come up in a night. I know not how they may act on a down or in fields. It seems to me that when small they are very slow in growth, and at this stage of millet seed size a slug or snail would not feel satisfied without a large supply disappearing, looking, too, at the holes made in large specimens by these voracious feeders. It is in this very small condition that they require watching, and (am I right?) I feel disposed on appearance to well sprinkle with salt. During the later stage the growth is far more rapid, and they may grow out of harm's way, but after my watching experience I am forced to the conviction that when found in the open one has been saved and numbers lost in this infantine

state, and that "full many a" Mushroom "is born to blush unseen," never, in point of fact, reaching this latter stage. If each little white ball at the spot where the spawn is inserted means nothing intervening to spoil the promise—a Mushroom then—each patch must mean from one to two hundred fungi, but it is not often, I apprehend, that half this number come to maturity, and the dire havoc that a night or two of undetected vermin ravages produces fully explains the melting away of so much promise, and may account in one way, as my experience has proved to me, for the non-success so often complained of in the culture of this delicious vegetable.—Y. B. A. Z.

SEEING in the *Wallington and Carshalton Herald* an interesting and instructive article from the pen of "A. H. S." on the cultivation of Mushrooms, and having understood that John H. Stephenson, Esq., of Weekley Mills, Kettering, North Hants, had been somewhat successful as an amateur, I wrote him on the subject. He says:—"Dear Sir,—In reply to your letter of the 12th inst. asking me to give you my experience in Mushroom cultivation, and what induced me to commence growing them, I beg to state that my attention was first called to Mushroom culture by reading a book called 'Mushrooms for the Million' by Mr. J. Wright, of 171, Fleet Street. And secondly, I have a particular weakness for that toothsome esculent, which I may say is shared by our whole family.

"Now as to mode of culture. Having a sunk cellar that, in consequence of the blue ribbon movement, I do not require for its original purpose, I thought I might utilise it for the growth of Mushrooms, so I at once set to work and gathered together as much stable manure as I could spare (about two cartloads) and had it turned over three times, at intervals of three or four days. I then left it in a heap for another week, when I proceeded to make the bed across one end of the cellar about 10 feet long by 3 feet wide, 2½ feet deep at the back, and 1½ foot in front. The manure being well shaken to pieces and beaten solid, I then left it for about a week for the heat to rise, which it did to about 120° in the middle of the bed.

"I then waited another week before the heat had sufficiently subsided to put in the spawn, which was done at a temperature of 90°. I broke the spawn into pieces of about the size of an egg and placed them about 9 inches apart over the surface, and then covered it with rather dry manure 2 inches thick and pressed firm. In about a week I found that the spawn had begun to run amongst the manure. I then covered the bed with fresh soil taken from a grass field just below the turf. The bed was covered to the thickness of 2 inches and beaten solid with the back of a spade. I then covered the whole with refuse hay 6 inches thick and left it.

"Now for the result. After waiting about three weeks I became anxious to be gathering, but alas! nothing appeared. I paid periodical visits every few days for about eight weeks, when one morning (not having been for a week) to my great astonishment and delight I found the bed covered with fungi, which quickly developed into full-grown Mushrooms, almost equal to those depicted in 'Mushrooms for the Million,' with which I have no doubt you are familiar. The bed kept on bearing a good crop from July to the end of October."—WM. GILBERT, *The Kennels, Welton, Lincoln.*

HEAD AND UNDER GARDENERS.

WILL you kindly allow me to add a few words to the excellent letters of "An Under Gardener" and a "Surrey Under Gardener." I may, in passing, remark that I am also in a subordinate position in the profession, to which I have belonged ten years, and may thus fairly claim to know a little of the difficulties of an under gardener's life. I have been in four situations in that time. In three of them I was so fortunate as to be under good masters. The fourth, a large establishment in the north of England, was under the management of a man whom I cannot think of without a shudder. No Russian Emperor was ever more despotic than he; in fact, I think he was one of the worst men it has been my misfortune to meet. To live with and to work under such a man was a misery, and the tyranny to which he subjected us was the cause of much mean and despicable deceit being practised by us towards him. During the two years I was at the place no less than six young men left the profession entirely, preferring in some cases to go as farm labourers rather than run the risk of meeting with such another as he. In mentioning this case I am glad to be able to add from my own experience and that of others that it is not a common one—at the same time there are others.

I know that some young men are very trying and difficult to manage, yet still if a man will not obey orders a master has always a remedy in his hands. I hope I shall not be thought presumptuous if I tell head gardeners that I think they too seldom realise the responsibility attached to the charge of half a dozen young men. If, as one of your correspondents pointed out, they would study the characters of each of their young men, it would in most cases be of vast benefit to both parties. My experience leads me to say that no two are alike, and as a young man's disposition so ought to be the treatment accorded him. Too many head gardeners think they have done with their young men at the close of working hours; but in my opinion it is then their greatest moral responsibility begins. If a man is in the habit of spending his leisure hours in dissolute

amusements it is ten chances to one that he will be of any use at his work, and a head gardener can by kindly advice and firmness be in many cases the means of preventing those under him from starting on a downward course. With all due respect to them (and I owe much more than I can repay to some of the masters under whom I have served) I would say, Take an interest in your subordinates at all times—in play hours as well as working hours, and let them all see that you do so. There is no knowing the good that a kindly word may effect, and kindness always meets with a better return than bullying. In a word the golden rule "Do as you would be done by" applies to gardeners as to all other individuals. If you will allow me I hope to say in a future letter what I consider is our duty to ourselves and those over us.—T. C. D., *Herts.*

[We shall be glad to see your "future letter" on the subject indicated.]

SACCOLABIUM BELLINUM.

AT the recent meeting of the Royal Horticultural Society, W. Lee, Esq., exhibited a plant of the charming little Orchid from his choice collection at Downside, Leatherhead, and the Floral Committee at once granted a first-class certificate for it. The same species has also been



Fig. 26.—*Saccolabium bellinum.*

flowering for some time in Messrs. J. Veitch & Sons' nursery, and from one of their plants our engraving has been prepared. It will be seen from this that the species is small compared with most other *Saccolabiums*, though of similar habit, the leaves being arranged in a two-ranked manner, and the flowers are very distinct in form. Their chief peculiarity is in the lip, which at the base is expanded in a strange cup-like manner; the apex is flattened and, extending at right angles with the cup, resembles a platform upon which bees or other insects may alight. The surface of this platform is covered with short white filaments, which impart a strange appearance to it when closely examined. In colour the flower is not very remarkable, though there are some curious contrasts. The sepals and petals are yellow, or with a greenish tinge, on which are scattered several circular dark red spots; the base of the lip is white with crimson spots, and the centre yellow with purple dots. The spikes are small, bearing from three to four flowers each, Mr. Lee's plant having the former number, and though unpretentious in general appearance it will become favourite with lovers of the many interesting diminutive species of Orchids.

ESPECIALLY TEAS.

So far is "J. H. P.'s" suspicion that I only grow one class of Roses from being well-founded, that my great difficulty is to find any class of Roses that I can do without. My collection, after careful weeding out,

still contains some three hundred varieties of Hybrid Perpetuals, Hybrid Teas, and Bourbons, and ninety varieties of Teas and Noisettes, which have all proved themselves capable of producing winning exhibition flowers; and the number of Tea plants is only one-fifth of the whole number of Rose trees that I grow.

I have not yet quite unravelled "J. H. P.'s" question, but I think I can best answer it by referring him to the schedule of the exhibition which heads the list of those he quotes against me; for in the Crystal Palace schedule for 1884 (as in that for the coming season of 1885), Classes 3, 25, and 27 are devoted to twenty-four trebles, twenty-four and twelve H.P.'s only, respectively, affording exactly a case in point. Taking the 1884 schedule, the combined value of the first prizes in Classes 25 and 27 for thirty-six H.P.'s only, is exactly double that of the first prize in Class 28 for thirty-six Teas and Noisettes only; while the amount of all the prizes offered for the thirty-six H.P.'s is to that offered for the thirty-six Teas as 16 to 7. However, I cannot any longer point out this exhibition as offering even half the sum for Teas as H.P.'s, for this year the prizes in Class 28 are made equal to those in Class 27, so that the guerdon of the Tea or Noisette is reduced to one-third of that of the H.P. Is "J. H. P." really prepared to maintain that one bloom of any H.P. he can name is worth three such blooms of Comtesse de Nadaillac as were seen in Class 28 for Teas and Noisettes this year?

By all means let the "backbone" be considered, but let the anatomy be completed by well-proportioned and graceful limbs.

The suggestion made in his sympathetic article by "Y. B. A. Z." that the supposed delicacy of Teas was induced by the use of Manetti as a stock, is interesting and plausible; and perhaps the belief may have been fostered by the amount of dead wood that often has to be cut out at pruning time. For Teas growing both late and early always have a good many sappy unripened growths, which are killed by the frost, and give the plants the appearance of being half dead; but the ripened shoots are as safe as those of the H.P.'s, which, from the absence of unripened wood, do not appear to have been injured, and are therefore thought to be hardier.

Apropos of the small number of exhibitors in the Tea classes, I wonder whether "Y. B. A. Z." read in the "Rosarian's Year Book" for 1884 Mr. Gray's remarks on the Tea Roses exhibited at South Kensington. That an exhibitor's Teas are often put into the seventy-two or forty-eight is quite true, but only proves what fine blooms of this class of Roses can be grown, and is an additional argument in favour of encouraging by all possible means the cultivation of sufficient numbers to supply both classes. For the sameness of colour that "Y. B. A. Z." hints at as an objection is due to the fact that the Teas still supply us with the best of our light Roses, and it is the very softness and refinement of colour pervading an extensive display of these delicately tinted Roses that induces the enthusiasm of spectators, many of whom, there is little doubt, following the lead of so great an authority as "D., Deal," consider that a dark beauty like Souvenir de Thérèse Levet should be but little encouraged as a "person of colour." As for an H.P. producing more exhibition blooms than a Tea, probably the Rose that most people would cite would be La France; but it must be remembered that this Rose is a hybrid Tea, and doubtless owes its floriferousness to its Tea parentage, as is the case also with that ever-flowering autumnal, Jules Finger. With this exception, however, I think I should be prepared to back, say, Marie Van Houtte, Perle des Jardins, Etoile de Lyon, Caroline Kuster, or Madame Lambard against a majority of H.P.'s. I can certainly bear witness to the lasting qualities of Tea Roses, for even in so hot a season as the past summer one bloom succeeded in occupying a place in a prize stand at three successive shows, while several flowers made two appearances.

Is it not among the Teas that we find the sweetest of Roses? (the whole army of "France" rises instantly to arms)—but if he be not already an old friend, as "Y. B. A. Z." likes colour in Tea Roses combined with the most delicious fragrance for his exceeding delectation, let him cultivate especially Socrates.—THETA.

I HOPE the letter on Rose-showing "Especially Teas" by "Theta" will induce Rose societies and their managers to give more prizes for Teas. Perhaps the National Society will lead the way. I think with "Theta" the Teas do not have fair play in Rose schedules at present. They are the gems of the Rose, more expensive to buy, and most difficult to breed, but I do not think they are more difficult to grow than the H.P. (that is if King Frost lets them alone). My experience is they only want good treatment, and I begin to think the less pruning they have the better, and then on such plants as Marie Van Houtte, Anna Ollivier, Madame Lambard, Caroline Kuster, &c., you will have a wealth of bloom all the summer.—G. M.

CINERARIAS AT CHRISTMAS.

WELL-FLOWERED Cinerarias are pleasing at all times, but large plants at Christmas and during the winter are of the greatest value. Last Christmas, and since then, we have had a number of Cinerarias in full bloom, and we shall always try to have some at the same season. It almost seems a pity to cut showy flowers at a time when they are so scarce, but we often want flowers in rooms where pots cannot be employed, and as the Cinerarias give so much satisfaction we never hesitate to cut them. In arranging them in a cut state we do not mix them with other flowers, but generally cut a good truss with some leaves attached, and place each one in a small glass tube by itself.

To have Cinerarias in flower at Christmas the seed should be sown in

February, or at the latest not after the beginning of March; indeed early sowing is the only secret connected with Christmas flowering. A pinch of seed sown in a 6 or 8-inch pot will produce several dozen plants, and these should be grown on in unheated sunny frames in summer, shading only from the brightest sunshine. Good plants will be secured by the end of September, when they should be placed in a temperate pit or house where they will have the benefit of a little artificial heat and fresh air, and this will soon induce them to form flower buds and massive trusses of richly coloured flowers. They must be kept free from insects, and should never at any time be confined in a close atmosphere.—M. M.

THE LEADING PANSIES OF THE DAY.

WE asked twenty-five of the leading amateur and gardener growers who compete so successfully at our great Pansy shows to furnish us with the names of what they consider the best twenty-four Fancy Pansies, the best eight Show dark selfs, the best five Show white selfs, the best five Show yellow selfs, the best nine Show white grounds, and the best nine Show yellow grounds. We think the result will be of interest to hundreds of your readers. We have given the number of Fancies up to thirty-six, so as to correspond with the Shows.—WM. PAUL & SON, Paisley.

FANCY PANSIES.

No.	Names.	No. of Votes.	No.	Names.	No. of Votes.
1	May Tate (Laird & Sons)...	25	19	Mrs. J. Stewart (Paul).....	10
2	W. Cuthbertson (Dobbie)	25	20	Mrs. J. Downie (Sutherland)	10
3	Catherine Agnes (Dobbie)	25	21	Mrs. Goodwin (Dobbie).....	10
4	Miss Bliss (Downie & Laird)	24	22	Mrs. Storrie (Paul).....	9
5	Evelyn Bruce (McComb) ...	23	23	Charlie Stansell (Stansell)	9
6	Jas. Gardener (Downie and Laird).....	22	24	Perfection (Dickson & Co.)	9
7	Mrs. Findlay (Samson)	22	25	Mrs. Barrie (Downie and Laird).....	8
8	Mrs. T. McComb (McComb)	21	26	Ruby (Laird & Sons).....	8
9	Mrs. Jamieson (Downie and Laird).....	21	27	Mrs. Forrester (Downie and Laird).....	8
10	Mrs. G. P. Frame (Weir) ...	20	28	David Wallace (Stewart) ...	8
11	Bob Montgomery (Paul) ...	19	29	Earl Beaconsfield (Samson)	8
12	Craigforth (Brodie)	19	30	Mrs. Duncan (Robertson)...	6
13	Endymion (W. Dickson) ...	18	31	Bessie Stewart (Paul)	5
14	Miss J. Orkney (Dobbie) ...	16	32	Maggie Weir (Frew)	5
15	Mrs. W. Stewart (Stewart)	15	33	Mrs. Sword (Sutherland) ...	5
16	David Saunders (Paul).....	12	34	Flora Gem (Matheson)	5
17	John Gold (Weir)	12	35	A. Macmillan (Dobbie)	5
18	Agnes Mitchell (Paul)	10	36	Robert Godwin (Dobbie) ...	5

SHOW PANSIES.

Dark Selfs.			White Grounds.		
1	Rev. J. Morrison (Taylor)	25	1	Mrs. J. G. Paul (Paul)	24
2	D. Malcolm (Cuthbertson)	23	2	Mrs. James Millar (Paul)...	24
3	Peter Lyle (Paul)	19	3	J. Foote (Downie & Laird).	24
4	Mauve Queen (Paul)	18	4	Miss Ritchie (Dobbie)	19
5	Andrew Miller (Paul).....	17	5	Miss Barr (Robertson)	18
6	Crosshill Gem (—).....	14	6	Jeanie Grieve (Dicksons and Co.).....	18
7	Harry Paul (Paul)	13	7	Miss Meikle (Paul)	14
8	Alexr. Watt (Paul)	11	8	Mrs. Stewart (Stewart).....	8
			9	Miss Baird (Paul)	6
White Selfs..			Yellow Grounds.		
1	Mrs. Galloway (Paul)	23	1	D. Dalglish (Robertson) ...	25
2	Mrs. Dobbie (Dobbie)	23	2	William Robin (Paul)	22
3	Mrs. Cadzow (Dobbie)	22	3	J. B. Robertson (Robertson)	20
4	Mrs. Turnbull (Dobbie) ...	21	4	Robert Pollock (Paul)	15
5	Mrs. Goodall (Paul)	13	5	Lizzie Bullock (Sutherland)	15
			6	Lord F. Cavendish (Robertson)	13
Yellow Selfs.			7	Thomas Ritchie (Robertson)	12
1	Gomar (Ross)	25	8	Baillie Cochrane (Dickson)	11
2	G. McMillan (Dobbie)	24	9	G. S. Veitch (White)	10
3	W. Crockett (Dobbie)	24			
4	Lizzie Stewart (Dicksons' and Co.).....	11			
5	Golden Bee (Paul)	6			

These results are obtained from returns furnished by J. S. Armstrong, Polton; J. Black, East Calder; A. Borrowman, Beeslack; W. Dick, Kirknewton; W. Dobbie, Alva (for Fancies); L. T. Fleming, Berwick; Jas. Galloway, Colinsburgh; Robert Goodwin, Kirkintilloch; Jas. Gowans, Hawick; George Gray, Lesmahagow; John Harper, Dregghorn (for Shows); A. Irvine, Tighnabruach; Peter Lyle, Kilbarchan; Thos. McComb, Montross; A. Miller, Blair Drummond; G. C. Murray, Carnwath; H. Polson, Galashiels; W. J. H. Ritchie, Denny; Geo. Ross, Laurencekirk; Robert Roy, Elderslie; Jas. Skinner, Penicuik; Hugh Stewart, Ayr; John Stewart, Lennoxton; Robert Stewart, Lenzie; Wm. Storrie, Lenzie; and Robert White, Bathgate.

RUNNER BEAN (GIRTFORD GIANT).—This is the best of all Runner Beans, and is quite distinct. I know no old Bean to equal it, for it excels

all the new ones. In the first place it has an excellent constitution, and grows with the utmost vigour. It begins fruiting early, and long continues bearing. Last year I bought 2s. 6d. worth of seed of it from Mr. Laxton, and although we gathered many dishes from it we managed to save several quarts of seed, and when the frost came late in November thousands of pods remained. It is useful for the earliest crop or the latest, and for exhibition. Last year I saw Mr. Laxton exhibit it several times in wonderful condition, especially at the Shrewsbury Show, and in every case it found many admirers. Fine as Mr. Laxton's pods were, they were only fair representatives of what it produces in all gardens. The pods average 10 inches and 12 inches long, and I have seen some longer than this. They are tender up to the time they are almost fully developed and well flavoured.—J. MUIR, *Margam*.

GOOSEBERRY BUSHES AND BULLFINCHES.

THE late mild weather has made the fruit buds on Gooseberry and other bushes rather prominent, and I find the bullfinches and also the house sparrows have not been slow in taking advantage of the changes. Where birds were numerous and troublesome in former years I have left the bushes unpruned until they began to show leaf, but the plan has not always been reliable. In cottage gardens it is a common practice to tie rags and string on the bushes, and also on lines of Peas, &c. I had looked upon this practice for some years as useless, but last year I pruned rather early, and had the bushes strung all over with cotton, crossing it about the bushes from one branch to another at the tips of the branches. The plan was quite a success, and the crop of fruit was enormous for both size and quantity. I adopted the same plan with some bush Plums. The result was that I had plenty of blossoms, and notwithstanding the severe frosts we had at the time they were in bloom we had about half a crop of fruit on several of the bushes.

I have found black cotton the best, which is scarcely visible at a little distance. This has a deterring effect on the birds, as they cannot very well see it until they become entangled in it. I am adopting the same plan again this year. Directly the bushes are pruned a boy with nimble fingers will go over several bushes in a little time, and the cost of material is small. I find the sparrows are very troublesome, and I am of opinion they often do more mischief than the bullfinches do, not individually, but collectively, as they are so numerous.—A. O. W.

SEASONABLE NOTES ON FLORISTS' FLOWERS.

FEBRUARY is or ought to be a busy month for florists, as indeed it is for all gardeners. There are Auriculas, Chrysanthemums, Carnations and Picotees, Pansies and Ranunculuses, and Gladiolus, all to be thought about, and indeed most of them requiring active work; it may not, then, be unseasonable to give a few hints concerning their requirements.

AURICULAS.—This has always been considered the time for what used to be considered the important operation of top-dressing, but of late years questions have been mooted as to whether it is at all necessary. It used to be said, "Remove all the earth as far as you can without disturbing the roots and then fill in with rich compost," and those who adhere to the old-fashioned way will still do this, and now is the time for doing it; but I have this year treated my small collection according to the newer plan—merely stirring the surface and filling up with compost of a similar character to that used for potting. In doing this I have examined, by just simply turning the pot on my hand, a considerable number of the plants, and have not found a trace of woolly aphis (except in one case). They are now in the pit I bloom them in, and which but for my misfortune ought to have been full of good plants.

CHRYSANTHEMUMS.—The instructions given in last week's Journal on the propagation of this fashionable and useful flower are so explicit and so in accordance with common sense that I need add nothing to what is there stated.

CARNATIONS AND PICOTEES.—These are now moving. Where they have been grown in beds (as mine are) they will simply require to have the surface stirred and kept clear of weeds. I may say that I have not lost a single plant out of doors this season. Where they are grown in pots they now require repotting; and where it is usual to pot them in pairs in pots about 9 inches across, in a compost composed, say, of two parts loam, one leaf mould, one old manure, and a little road grit, this is no doubt the best mode of growing them, although the most troublesome. The best, for they are under command, can be moved about at will, and layering is much more easy, as the pot can be placed on a bench and stooping avoided. When potted they should be placed under shelter until they are established, as the check that they receive in repotting makes them less capable of bearing rough and cold weather.

GLADIOLUS.—It will now be time to sow seed and also the small spawn. It is a good plan when this can be done to appropriate a frame for the purpose, half filling it with loam properly prepared for the purpose; indeed, if there be a sandy loam it is almost sufficient without any addition. The spawn should be sown in shallow drills and the seed scattered broadcast over the bed, after which some loam and leaf mould may be sifted over it until it is covered. Towards the end of the month a fresh planting of bulbs may be made, although the main planting had better be deferred until March.

PANSIES.—Here, too, it will depend as to whether they are grown in pots or not. In pots they will now be showing for bloom, and the shoots will require staking and the pots kept clear of weeds; in beds the surface had better be stirred and a slight top-dressing of decayed manure given

to them. The hot season of 1884 completely destroyed my collection which I had again made, and indeed it is a heartless task growing them down south.

RANUNCULUSES.—I have always considered the 12th of February to be the orthodox day for planting Persian Ranunculuses, and on the 14th I this year had some planted. I never saw the ground in more beautiful condition; they were planted in rows about 6 inches apart and about 4 inches in the rows. Where this has not been done no time should be lost, as so much depends on getting them in the ground in good order.—D., *Deal*.

VINERIES.

I HAVE no doubt that Mr. Ward carefully thought over all things connected with vineries before penning his instructions on the building thereof; still I fail to see that his plans are the only proper ones to arrange all the details therein. It may answer his purpose very well, and still not please everyone. What I said about arranging the pipes was with the idea of advising persons to guard against the attacks of red spider. I consider prevention in most cases is better than cure. Mr. Ward must not suppose that everyone understands the use of liquid manure in the evaporating troughs of the pipes to prevent the spread of red spider so well as he does himself. What I advised was, I contend, a better way for the generality of persons to follow, as from Mr. Ward's own admission, page 113, red spider does attack Vines through the heat being "centralised." In my way of arranging the pipes such a thing cannot happen through the same reason as he admits is sometimes done, hence my reason for arranging the pipes which would equalise the heat through the house.

Mr. Ward admits that the heat is "diffused" by the Alternantheras and other plants growing over the front pipes. Now were they not so placed no "diffusion" would be required. If it is an advantage to fill the evaporating troughs with liquid manure for the benefit of the Vines, this can be done just as well under the system I advocate as it can be done by Mr. Ward's plan, and better too; because there can be more troughs, as the flow pipes (five) are more in number, and the ammonia arising from the liquid is more equalised over the house.

I did not say it was an "obstacle" having some of the bunches earlier in one part of the house than the other. I do not consider making or renovating the border very difficult with the pipes, as I suggest, 1 foot 9 inches apart; that can hardly be called a "trelliswork" of piping, the difficulty is more imaginary than real.

Everyone does not wish to have Vines to furnish the hip roof of the vinery, particularly where the house has to do double duty for plants, &c. Some require the back walls furnished with climbing plants; the back or hip roof can be used to suspend shelves from, on which French Beans or Strawberries can be grown. Taking these things into consideration I do not think using of the space required for the cement path for a Vine border is for a "better purpose."—E. MOLYNEUX.



THE Trustees of the VEITCH MEMORIAL FUND have decided to offer the following medals and prizes during the present year—namely, one medal and prize of £5 to the Botanical and Horticultural Society of Durham, Northumberland, and Newcastle-on-Tyne; one medal and prize to the National Rose Society; and one medal and prize to the National Chrysanthemum Society. These medals and prizes are to be offered for subjects to be selected by the Committees of the respective Societies. The Trustees have also determined to place three medals and £5 prizes at the disposal of the Committee which is to have charge of the Orchid Conference, to take place at South Kensington in May next. In all cases the awards are to be made in favour of *bonâ fide* gentlemen's gardeners and amateurs only.

— THE ROYAL HORTICULTURAL SOCIETY OF ABERDEEN have issued their schedule for 1885, from which we learn that the summer Exhibition will be held in the Links, Aberdeen, July 29th, 30th, and 31st; the autumn Exhibition being announced to be held early in September, but the date is not yet fixed. At the first Show 201 classes are provided, at the second 197, the prizes including numerous silver medals, silver cups, &c.

— THE death is announced of Mr. CHARLES DOWNING of Newburgh, U.S.A., a noted pomologist, at the age of eighty-three. He was a brother of Mr. A. J. Downing, a brilliant horticultural writer and a skilful American landscape gardener, whose magazine and other works were

recognised in this country forty years ago; but he died too early. The brother whose loss we now regret was in partnership with him in the Newburgh Nurseries, and he also edited the later editions of his brother's "Fruit and Fruit Trees of America."

— MR. B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, has received a Royal Warrant appointing him nurseryman to H.R. Highness the Prince of Wales.

— A DORSETSHIRE correspondent sends us a DOUBLE-SPATHED RICHARDIA which is one of the best we have seen. The spathes are equal in size, 6 inches long by $4\frac{1}{2}$ broad, and are directly opposite each other on each side of the spadix. Similar specimens have been sent us at various times, but usually there has been a very noticeable difference in the size of the two spathes.

— AT a recent monthly meeting of the BELGIAN HORTICULTURISTS at Ghent certificates of merit were awarded for the following new plants— To the Continental Horticultural Company for *Brunsvigia magnifica*, *Hæmanthus Kalhreyeri maximus*, and *Cypripedium Haynaldianum roseum*. To M. M. Vervaet & Cie. for *Odontoglossum guttatum*. To M. Peeters, Brussels, for *Imantophyllum* var. *President C. Bernard*; and to M. M. Desbois et Cie. for *Begonia hybrida nova*.

— FLORAL DECORATIONS AT A WEDDING.—On the occasion of the marriage between Viscount Lymington and Miss Beatrice M. Pease, on the 17th inst., at Sir Joseph Pease's town mansion, Kensington Palace Gardens, the decorations were entrusted to Mr. J. McIndoe, Sir Joseph Pease's gardener at Hutton Hall, the whole being done by plants and flowers from that establishment. The principal flowering plants used were Azaleas, Bouvardias, Callas, Cyclamens, Deutzias, Dendrobiums, double white Primulas, Tree Pæonies, *Pimelea spectabilis*, Hyacinths, Narcissus, Spiræas, Tulips, Crocuses. These judiciously intermixed with Ferns, Palms, Crotons, *Dracænas*, *Selaginellas*, &c., made a very effective display. In the decoration of the breakfast table Lily of the Valley, *Narcissus poeticus*, *ornatus*, and *Cœlogynes* were the flowers used. A number of small silver cups were filled with white Cyclamens, and *Cocos Weddelliana*.

— A CORRESPONDENT writes—"There is now at Welham Hall, near Retford, the residence of Charles Thorold, Esq., a handsome DISPLAY OF PRIMULAS, consisting of about 150 plants in 6-inch pots, raised from seed supplied by Messrs. Sutton. The plants are well grown and furnished with abundance of bloom, the trusses being thrown well above the foliage; the colours are pure, bright, and distinct, ranging from deep rich purple to the purest white. Many of the individual flowers measure nearly 7 inches in circumference. The collection as a whole is very creditable to the grower Mr. Channon. In the same garden is a fine example of the Mistletoe growing on an Apple tree, and forming a dense bush quite 9 feet in diameter."

— HORTICULTURAL CLUB.—The annual dinner took place at the rooms, 1 Henrietta Street, on Tuesday evening last, under the presidency of Mr. John Lee. There were present the Rev. F. H. Gall and Th. Flintoff; Messrs. Harry J. Veitch, Sherwood, Crowley, Druery, William Bull, E. G. Loder, Geo. Bunyard, B. R. Cater, F. W. Cooling, C. F. Hore, Harry Turner, Geo. Deal, &c. In returning thanks for the Club the Secretary stated it had been ten years in existence, had been the means of bringing together in social intercourse a large number who were interested in horticulture, and although it did not expect to be other than a select Club, yet he thought that a Club which after ten years' existence could leave off on its tenth year with a balance of £50, and had a fund of £300 invested in consols, might fairly be considered to be in a satisfactory condition. A very pleasant evening was spent, and much praise bestowed on the arrangements made for the convenience and comfort of the members.

— AT a Committee meeting of the WIMBLEDON HORTICULTURAL SOCIETY it was decided to offer a five-guinea silver cup, with second and third prizes £3 and £2, for twenty-four cut Roses, distinct, open to all comers; also a silver cup of the same value, with second and third prizes of £2 and £1, for twelve cut Roses, distinct, open only to amateurs within the Wimbledon district. Several new special prizes are announced, and the schedule, which will be issued in the course of the present month, will be of a most attractive character. Subscribers will be interested to learn that a regulation was passed to the effect that the summer passes will be available at the autumn Exhibition of *Chrysanthemums*, and should the ordinary members' tickets not be

used for the summer Show, they will also admit at the autumn Exhibition. The date of the summer Show is fixed for the 8th of July, to take place at Cannizaro, by kind permission of Mrs. Schuster. Mr. H. A. Rolt, 170, Hartfield Road, New Wimbledon, is Secretary.

— "M. M." writes as follows on PROPAGATING DAHLIAS:—"There may be various ways of doing this, but my plan is to bring out the whole roots from their storage place about this time. Cut the roots away from the main stem, and have them all as single tubers. They are then placed closely up on end in boxes or pots with leaf soil or common earth around them, and then they are placed in a gentle heat. It is not long before little shoots are seen being emitted from the top of each tuber, and when these are a few inches in height the whole of them are lifted from their place in the box and potted singly. This is a much better mode of increasing the plants than taking cuttings, as the latter require a long time to form roots, and they do not make such fine plants the first season as those raised by dividing the roots. This spring we are only increasing two of our varieties, and those are the red and white Cactus varieties, which are very showy and useful."

— THE annual meeting of the LIVERPOOL HORTICULTURAL ASSOCIATION was held on Saturday, the 7th inst., Mr. J. Richardson in the chair. There was a large attendance of members. The Chairman, in opening the proceedings, congratulated the meeting on the successful shows held by the Association and on the increased balance in their favour on the year's workings. Mr. J. Gore submitted the sixth annual report, which stated that the exhibition, in point of merit, as well as attendance, had been the most successful the Association had ever held. The statement of accounts was submitted by the sub-Treasurer, Mr. Minshall, which showed a gain on the year of £136 16s. 7d., which, added to balance in hand, made up a total reserve fund of £578 13s. 7d. After votes of thanks had been passed for the services rendered to the Society by the officers during the year the meeting proceeded to the election of officers for the coming year. The Mayor, Mr. David Ratcliffe, was elected President; Mr. Fletcher Rogers re-elected Honorary Treasurer; Mr. W. Minshall sub-Treasurer; Messrs. J. Peers and J. Kelly Auditors. The Committee was elected by show of hands, the following being chosen:— Messrs. Richardson, Waterman, Curle, Powell, Green, Stephenson, Mease, Bromley, Morris, Foster, Hurst, Johnson, Young, and Mercer; and Mr. Bridge was appointed Secretary. We are glad to notice the steady progress of this Association during recent years, which is the best proof of able management. The spring Show for the present year opens on March 17th, the summer Show on August 1st, and the autumn Show on November 24th, the schedules being comprehensive and the prizes good.

CYPRIPEDIUM INSIGNE.

THIS is one of the most easily grown and, in my opinion, the most useful of all winter-flowering Orchids. It is neither a new nor an expensive variety, but for general culture it has much to recommend it. A cool frame in summer and an ordinary greenhouse or conservatory in winter will bring it out in perfection. In the catalogue of a well-known Orchid-growing firm I find *C. insigne* priced at 5s., *C. insigne Chantini* 6s., and *C. insigne Maulei* 4s.; but I would rather possess a dozen of the 5s. plants than one of *Chantini*.

With the majority of cultivators I believe that *C. insigne* would ultimately prove more serviceable and satisfactory than either of the others. We have over half a dozen of it. The largest specimens are in 10-inch pots and are fine masses. Each one produces dozens of flowers every autumn. They are very ornamental as room plants, and for supplying cut flowers there is none to equal them. This time they began flowering in October, and we have many blooms open now. Some which were cut and placed in glasses, and some sprays of *Calanthes*, remained perfectly fresh for over three weeks, and with a little extra attention in changing the water three times or so weekly I am sure they might be kept up for six weeks at least. Mr. Cypher of Cheltenham, who values this Orchid very highly, has lately had many spikes with two blooms on each; but although our plants have been very free with single blooms, they have never given us any twins. The double ones are interesting, but not of much more value than the single ones.

The cultural requirements of *C. insigne* are very simple. It makes roots freely and produces top growth in proportion. It is not subject to disease or liable to be attacked by insects. The roots are thick and fleshy and delight in plenty of drainage. The pot in which it is grown should always be a quarter filled with crocks properly arranged. Pure fibrous loam, with a small

quantity of pieces of charcoal added, is a most suitable mixture in which to pot it. It will thrive grandly in this. Now and until April the plants should be kept dry at the roots in a cool atmosphere, and about the beginning of April they should all be examined. We find root-bound plants when the drainage is all right succeed uncommonly well. The best of our plants have their pots filled with roots, and the leaves turn down around the pots so that the latter can hardly be seen. These plants will not be disturbed as long as they progress, as they have been doing lately. We would rather have half a dozen large established plants than two dozen small ones. Indeed those who have only seen *C. insigne* in a 6-inch pot with a few straggling flowers can form no idea of its merits.

Dividing, multiplying, and repotting the plants annually is not the best way to treat it; but small plants in a growing state may always be shifted, and these as well as the plants not shifted should be placed in a damp rather warm atmosphere about the beginning of April. Established plants must have abundance of moisture at the roots, but newly potted ones should only have it sparingly until growth begins. In May and until the end of September an unheated frame is the best position they can occupy. They cannot be too near the glass or have too much light, and they will be benefited by copious supplies of moisture at the roots. In the fore part of the summer the lights should be constantly on the frame, and so long as the plants are growing they may be kept rather close; but throughout August and September abundance of air should be admitted on all fine days and mild nights. In this way the growth will be thoroughly matured, and it is then profuse blooming becomes a certainty. Nothing injures this *Cypripedium* more than keeping it in a close warm atmosphere at any time, more especially in summer, and the blooms when open remain much longer perfect in a cool dry atmosphere than in heat and moisture.—J. MUIR.

THE GERMINATION OF SEEDS.

(Continued from page 110.)

[A lecture delivered before the Institute of Agriculture, South Kensington, March 8th, 1884, by Professor G. T. Bettany, M.A., B.Sc., F.L.S. Published by Messrs. Chapman & Hall.]

THE condition of the seed at the commencement of germination has now been reviewed, and the necessity for the addition of water and oxygen as outside ingredients has been mentioned. We will assume that a suitable temperature is attained. As to light, it is well known that germination will take place in the dark if water and oxygen be supplied. Thus, we can now inquire what happens within the seed, by means of which the root is put forth, the new leaves are sent up, and the store of food gets diminished. Very soon after the swelling of the seed the granules of nitrogenous albuminous matter may be seen to become more gelatinous and viscous, and gradually to give rise to a ground substance resembling in appearance the former protoplasm while the seed was ripening. The portions of substance which had a crystalline appearance dissolve. In particular, the nuclei of the cells return to their ordinary condition, and this is especially the case in the parts at the tip of the little root and at the growing point of the stem. This is very quickly attended with a swelling of the cells in these situations, and the rapid formation of new ones, by which the root tip is forced out of the seed-skin, and the increase in growth of the young stem and leaves begins.

But inasmuch as the living protoplasm of these new cells is very largely composed of nitrogenous, albuminous material, it is evident that the quantity of this kind of material in the root and stem and young leaves must increase. It is proved experimentally that it does so increase, while in the large cotyledons of Beans and Peas, and in the embryo food of Maize, it diminishes as germination proceeds. Yet it is one of the fundamental properties of protoplasm in plants not to travel through cell-membranes from one region to another, even when they are so very thin as they are in young germinating plants. The different albuminous constituents of protoplasm do not travel by diffusion through cell-membranes. How, then, can we account for the presence in the growing parts of this increased amount of albuminous matter? One obvious source is the albuminous matter in the resting parts of the seeds. But the transfer cannot take place without a distinct chemical change in the compounds. That which is not diffusible, and cannot travel through the cell-membranes, has to be so transformed that it can pass through them—can penetrate through the invisible pores between the molecules of the cell-membranes, and travel from place to place in the growing plant, the active parts, by the changes which take place in them, creating a demand for more material to continue the processes which are there in progress.

Those who are familiar with animal physiology will realise that here is a problem very much akin to that of the digestion of food in the stomach. Albuminous matter taken in in a non-soluble form in meat, in eggs, in milk, in bread, has to be transformed into a soluble condition, in order that it may pass through animal membrane into the blood. And, just as in animals, the required chemical change is effected by the action of a ferment known as pepsin, so in seeds the digestion—for it is nothing less—of the stored-up food is effected by one or more kinds of ferment. A ferment, chemically speaking, is a body which in some way assists or

presides over changes in other substances, without itself being used up proportionally to that change. It exists in very minute quantity, and there is no proof that it itself becomes changed in the process of transformation. In many cases the change consists essentially in the addition of one or more molecules of water, but in others there may be a considerable splitting up of the albuminous matter.

Numerous seeds when germinating contain ferments capable of transforming albuminoid substances into peptones, which are able to pass through cell-membranes. Plant pepsin, according to Gorup Besanez, has quite similar powers to animal pepsin. The ferment itself is very little, if at all, changed or used up. The presence of an acid is required, as in human digestion.

There is a considerable amount of evidence that the most complex nitrogenous bodies during germination split up into two kinds of substances, one nitrogenous and the other non-nitrogenous, and that these nitrogenous bodies can travel to the spot where new growth is going on, and there be re-combined with non-nitrogenous matter to form complete protoplasm. A number of nitrogenous compounds, which can only be derived from the albuminous bodies, make their appearance during germination, and contain considerably less carbon and oxygen than they do. One of the most studied of these is asparagin, which derives its name from common Asparagus, in which it was first discovered. It is abundantly developed in many leguminous seeds during germination, although when ripe, and before the commencement of germination, it is not present in them. It has been found also in Barley and Maize, and some think it is invariably formed during the progress of germination. It is most highly diffusible, and it appears very possible that by combination with sugar derived from starch this body could be the means of regenerating protoplasm, and furnishing it to the growing parts.

I here recur to the fact that oxygen is essential to germination, and proceed to comment on the corresponding facts that carbonic acid and water are very considerably formed and given off by germinating seeds. This is the true respiration of plants, as of animals, and is most conspicuous in the germinating state of plants, because it is then that the most active changes go on in a small bulk; every part of the embryo plant is leading an active life at the same instant. Thus, when twenty-four grains of Wheat, weighing in the dry state 1 gramme, were placed, after soaking, in a closed glass vessel, after seventeen hours they began to germinate, and at the end of twenty-one hours the air in the vessel contained $2\frac{1}{2}$ cubic centimetres of carbonic acid, and had lost that amount of oxygen. When three soaked Beans, whose dry weight was 1 gramme, were left in a closed vessel for forty-eight hours, during which time they put forth roots one-fifth to two-fifths of an inch long, the contained air included nine cubic centimetres of carbonic acid, and had lost an equal amount of oxygen.

These facts are most significant when their meaning as to weight is considered. For every thirty-two parts of oxygen absorbed forty-four parts by weight of carbonic acid are evolved. The gas given out has increased in weight more than one-third. We can thus see why the dry weight of germinating seeds, independently of the water they take up, decreases considerably until they have begun to absorb carbon for themselves by means of green leaves from the air. Thus, forty-six Wheat grains, weighing when dry $1\frac{1}{2}$ gramme and germinated in the dark for seven weeks lost nearly one gramme of dry weight, nearly half the loss being carbon, another half oxygen, while the nitrogen and the mineral ash remained stationary, showing how tenaciously the young plant keeps its nitrogen and its ash.

(To be continued.)

NATIONAL CHRYSANTHEMUM SOCIETY.

A GENERAL Committee meeting of this Society was held at the Old Four Swans, Bishopsgate Street Within, E.C., on Monday, the 16th inst., at 7 P.M., under the presidency of E. Sanderson, Esq., and a large number of the members were present.

It was announced by the Secretary, Mr. William Holmes, that Mr. Crute had offered the sum of £10 for Chrysanthemums grown in his patent pots, which offer was unanimously accepted. It was further resolved that the Veitch Memorial with £5, for specimens of superior cultivation by *bona fide* amateurs or gentlemen's gardeners, be awarded as the first prize to a new class for thirty-six incurved blooms in not less than eighteen varieties or more than two blooms of any one variety, the Society adding a second and third prize of the respective values of 40s. and 20s.

During the ensuing year the Floral Committee, which has hitherto held its meetings at the Old Four Swans, will sit in the Organ Gallery of the Royal Aquarium, Westminster, for the purpose of judging the merits of new or rare Chrysanthemums submitted for certificates by growers.

These meetings will be held at half-past two o'clock on Wednesday, the 14th and 28th October; on the first day of the Society's Exhibition—viz., 11th November; on Wednesday, the 25th November; and the last on Wednesday, the 9th December. There is but little doubt that the Society has made a step in the right direction in holding these Floral Committee meetings in daylight instead of in the evening, as was previously the case.

The General Committee meetings of the Society, which under Rule 3 were formerly held on the first Thursdays in February, March, September, and November, have also been changed. During the year 1885 and afterwards they will be held on the first Mondays in February, September, and October, but other meetings will also be called by the Secretary should the business of the Society necessitate it. Some alteration as to the delivery and removal of exhibits for the Show was made in Regulation 5, to which we refer our readers when the schedule is issued.

It was resolved that the Exhibition of late-blooming Chrysanthemums be held on Wednesday, the 13th January, 1886; that this Exhibition should be open to all members, but that an entrance fee of 5s. be charged to all

exhibitors who are non-members; that there be no limit as to the number of varieties; that entries be received up to the morning of the Show; that all plants be staged by twelve o'clock and remain till the close of the Exhibition; that exhibits be correctly labelled.

Letters were also read from the secretaries of various provincial Chrysanthemum Societies, announcing their intention of becoming affiliated in accordance with the circular sent out by the N.C.S. a short time since. The proceedings of the evening were brought to a close shortly after nine o'clock, and the usual votes of thanks passed.

PHAJUS GRANDIFOLIUS.

WHERE this useful old Orchid has been in a temperature of 60° up to the present time it will be producing its giant flower spikes very quickly. When well grown and the plants are strong the flower spikes will often attain a height of 4 or 5 feet and carry a large number of their showy flowers towards the top. While in flower this is one of the best Orchids in cultivation for the decoration of the conservatory. It shows to great advantage in this position when arranged with other dwarf flowering plants, as the spikes rise well above them and are very effective. This Orchid is not half so generally grown in gardens where large quantities of flowering plants for decoration are required as it deserves. Very rarely indeed in gardening establishments is this Phajus employed in comparatively cool houses. On the contrary, it is generally subjected to stove heat. It will succeed in the stove, but the flowers do not last half so long as they do in the cooler and drier atmosphere of the conservatory. I have proved from experience that when it is given stove treatment the whole year round its strength soon decreases until the foliage is small and the flower spikes puny, but when subjected to cool treatment from the time its first flowers open the plants increase yearly in strength. To grow this plant well it must be thoroughly rested like the majority of Orchids, and this is best brought about by a considerably lower temperature while in bloom. It enjoys a season of rest if kept in any structure where the night temperature does not fall below 45°. That a lower temperature is beneficial is proved by the luxuriant growth the following season.

At this season of the year the greatest care is needed in applying water to the roots. From the time the flower spikes are visible until they start into growth and commence root-action in spring they must not receive too much water. The soil should never be dry until the spikes are well developed and the plants are removed to a cool house. While in this structure they will need very little water, only sufficient should be given to prevent the foliage flagging. If the soil about the roots is kept wet they will perish, and this is a great mistake, whereas under proper treatment they will be fresh and plump until roots are formed from the new growths, and the foliage gradually dies. Many cultivators do not try to preserve the foliage after the flowers have faded, but cut it away and repot their plants directly new growths are observed issuing from the base; this I have proved to be a mistake. The old foliage should be retained as long as possible, and if cared for will not all have disappeared when the young growths commence root-action for their own support.

Where this plant is grown in numbers the whole of them need not be brought into flower at the same time; on the contrary, they should be retarded and brought forward in separate batches. This old plant will bear retarding in a lower temperature without the slightest injury even from the time the flower spikes are first visible. It is a grand exhibition plant, and can be retarded without injury for exhibiting at our spring shows, which is not the case with many Orchids of less robust constitutions.—W. B. N. G.

GAS LIME AND WIREWORMS.

ALLOW me to correct a common error—namely, that gas lime will kill wireworm if applied to the land. Some years ago I saw this assertion made in an agricultural journal; but before applying the lime I caught some of the worms. The gas lime was fresh from the gasworks. An opening was made and the wireworms enclosed in the lime. They remained there some considerable time, but their health and well-being was apparently not the least affected, for they were as lively as when put in. Now, seeing that the lime in its fresh and unadulterated state had no effect upon the pest, does it seem reasonable that it would clear the land when mixed with the soil? Gas lime is very useful on grass land when overgrown with moss, but I have never found any benefit from its use in arable land. For mossy grass lands it can be applied either by itself or mixed with soil. If the land be badly affected, then apply the lime alone. It will take both moss and grass, but the latter will grow again a sweeter herb. Perhaps the best and cheapest plan is to mix equal parts of gas lime with road scrapings in the autumn, turn it during the winter, and apply to the grass land in the spring.—J. R. R.

FOREST HOUSE NOTTINGHAM.

IN the picturesque neighbourhood of Sherwood Forest is situated the house and estate of E. Patchitt, Esq. The garden there is noted for a remarkable fernery, which deserves a brief description in this Journal. The roof is of the ridge-and-furrow form, the house being 48 feet by 52 feet, and about 18 feet high. The interior resembles a huge cave with rocks and ragged arches of tufa, the path winding amongst the rocks, and there are steps to ascend, so that the beauty of the plants beneath can be seen to advantage. Most of the Ferns are planted out in pockets formed of the same material as the arches, and so arranged that at every turn a

fresh scene presents itself. Towards the centre is a fine *Dicksonia antarctica*, measuring 4½ feet round the stem; also noticeable is a grand specimen of *Cyathea medullaris* with twelve large spreading fronds. The walls have a rocky and natural appearance up to the roof, many dwarf-growing and graceful Ferns with Mosses are flourishing. Begonias of the Rex class are interspersed amongst the Ferns and are growing freely, the colour being very effective. One corner where the chimney is situated has caused Mr. Graham, the energetic gardener, some trouble. Ferns would not take kindly in such a dry place, but he has overcome the difficulty by planting Epiphyllums, and at the present time they are a mass of bloom, giving a bright contrast to the foliage on either side. Near the roof is a large plant of *Sparmannia africana* about 6 feet through, which supplies a great quantity of useful flowers. Trailing about like Ivy is the pretty *Mikania pulverulenta* with *Selaginellas* and *Tradecantias* in variety, making a charming groundwork.

The house contains besides many Tree Ferns some large and noble Palms, such as *Latania borbonica*, *Seaforthia elegans*, and *Phoenix dactylifera* with thirty leaves. When the Ferns become too high the lower part of the stems is wrapped in sphagnum moss and afterwards cut through and lowered into the receptacle which has been previously cleaned out and filled with fresh compost. This process checks growth for a season, but when established again they make fine crowns and fronds. The hollows among the stones are formed into miniature lakes; the water, being soft and the same temperature as the house, has perhaps something to do with the bright and clean appearance of the foliage around. By an ingenious contrivance the water is made, when required, to run down the stones in every direction, and over the lakes it pours between the stones like a waterfall.

The grounds enclosed are about twenty acres, and almost as interesting as the Fern house. There is plenty of local sandstone at hand, so rockeries are formed with little expense; one of these is planted with alpine and herbaceous plants, another is a bank of Foxgloves, &c., and for a blind and ornament there are several large beds of *Rhododendrons*, *Laurustinus*, *Coniferæ*, and most telling is a beautiful bed of Golden Holly. Fruit trees are represented in numbers, especially the Apple, which receives a greater amount of root than branch pruning. It is perhaps worthy of mention that in some parts of Nottingham, Lincoln, and Yorkshire the Apple crop was much heavier and the fruit finer last year than in 1883.

The walls of the house are partly covered with plants, such as *Rose Devoniensis* and *Magnolia grandiflora* covering a large space. My visit being brief, I had not time to take note of all the good things the place contains, and my best thanks are due to Mr. Graham for his courtesy.—G. W. CUMMINS.

CHRYSANTHEMUM MRS. MAHOOD.

By this post I send you a bloom of the last of the Chrysanthemums. I have several more blooms opening, but I am afraid they will not come to maturity. The variety is Mrs. Mahood, quite new. I cannot say if it is always late, but I have had several blooms of it very late. I have just cut the last bloom to-day of Mrs. Charles Carey, and those yet in bud are Duchess of Connaught. I did not finish cutting Sarnia before the middle of January. I have a few blooms yet of Meg Merrilees.—ROBT. OWEN.

[The bloom sent was neat and quite fresh. Some of the earliest blooms we saw this season was of this variety, and we were not aware it would continue flowering so long.]

MASDEVALLIA TOVARENSIS.

AMONGST the best of useful easily grown Orchids the Tovar *Masdevallia* merits a foremost position, and this it is gradually but surely securing. It is somewhat surprising, however, that the species should have been cultivated in Britain for twenty years, and for a good portion of that time be comparatively neglected as a garden plant. In some collections of Orchids it has been duly prized, but beyond these it was scarcely known. It has not been alone in this neglect, and one reason why it and others are becoming general favourites is due to the fact that the "cool house" for Orchids is now almost indispensable in many establishments. In gardens of very moderate extent accommodation can be provided for Orchids that are so cheaply and easily grown as these, for though all must admire the gorgeous *Cattleyas*, the charmingly graceful *Phalænopses*, and the varied *Dendrobiums*, many are debarred from the enjoyment of their beauty by the expense attending their purchase and culture. The cool species are, therefore, essentially the people's Orchids, and their popularity must unquestionably advance so long as beautiful flowers find favour.

Masdevallia tovarensis is one of the most floriferous species in the genus, and some idea of its qualities in this respect can be gathered from the woodcut, fig. 27. This portrays a specimen in Messrs. J. Veitch and Sons' Chelsea Nursery that for weeks past has been producing its delicate white flowers in profusion. At the time our artist's sketch was taken the plant had over four dozen buds and expanded flowers—a remarkable number for a plant of such moderate size, growing in a shallow

pot 6 inches in diameter. This *Masdevallia* succeeds under the same culture as the majority of other species, requiring very little artificial heat at any time. A constant supply of moisture is, however, essential without any approach to stagnation, which is almost as injurious as drought. A compost of fresh sphagnum moss and peat suits the plant, with thorough drainage and a cool moist position in the house.

THE CAMELLIA AND ITS CULTURE.

It will, I think, be readily admitted that Camellias are amongst the most serviceable and beautiful of all greenhouse flowering plants, and it

of success in the production of specimens. By forcing I mean an attempt to induce rapid growth by means of large shifts, rich composts, and stimulating manure. It is remarkable in what a small quantity of soil a Camellia will live and even thrive, and the constant aim should be to secure a good head of foliage in a small pot. If this be secured at an early stage of growth the after work will be comparatively easy. Let me, therefore, preface what observations I have to offer upon the culture of the Camellia by asking a question—namely, What argument can be introduced which will show the advantage of firm potting and the employment of small pots? The very fact of firm soil lessening the necessity of using so much compost is in itself advantageous because economical; but, further, what is the use of food if it is not consumed? It is quite certain that a great quantity of food in large loosely potted plants is never ap-



FIG. 27.—MASDEVALLIA TOVARENSIS.

has been well pointed out that if the Rose has many claims to be considered the queen of summer flowers outdoors, the Camellia has also many qualities which claim for it the premier position amongst winter flowers under glass. I can fully corroborate all that has been said in that respect, and it is to be regretted that well-grown plants are comparatively rare in this country—a circumstance the more remarkable inasmuch as from the length of time the plant has been under cultivation, and its recognised decorative value, even the most minute details respecting its management might have been familiar to every plant-grower. This does not, however, appear to be the case. Some collections planted out are satisfactory, but specially good culture in pots or tubs is rarely seen.

The Camellia, although one of the simplest plants to grow, dislikes forcing, and to this peculiarity I attribute in a great measure the want

appropriated; what, then, becomes of it? The roots will never find it; first, because much of it is washed away, and, secondly, because when loosely potted the soil is never permeated with fibrous roots. For the multiplication of fibrous roots there must be a resisting medium. An examination of the roots of almost any plant in a pot will show this. Examine those lightly potted plants, and a limited number will be very apparent working from the centre straight to the pot. The great bulk of the soil in the interior will be for a long time unoccupied with fibres, and in the meantime the virtues of the soil are being washed away. It is not until the roots reach the sides of the pot that they produce fibres for absorbing nutriment from the soil. In time several of these small foraging roots will find their way into the centre of the soil, but they always appear reluctant to leave the sides of the pot. In firm soil the roots are very

different in character; they are divided and sub-divided at every point of extension, and the soil becomes netted with fibres that with their million mouths gather the food that is distributed through the soil.

The aim of the cultivator of Camellias should be the production of the greatest possible number of fibres. This cannot be attained without firm soil and moisture. In firm potting it is of the greatest possible importance that the soil be in the right condition, neither too wet nor too dry.

I wish now to allude to the Camellia so frequently shedding its flower buds, a subject upon which much has been written in the horticultural press. Although I have known the buds of Camellias fall from many different causes, I think there are but three reasons which may be considered of primary importance. Many induce their plants to make abundance of wood, and flower buds are formed in plenty, but they fall before they open. The chief cause is dryness at the root; the second cause is dryness of the atmosphere at the time when the buds are in their last stage of development previous to expanding; and the third, which is the most frequent, indifferently ripened wood. Most experienced gardeners know that no immature wood will produce flowers or mature fruit perfectly, and this applies forcibly to Camellias. I would therefore recommend all who grow them, and wish to retain their flower buds in a perfectly healthy state, to have the plants in all the sunshine possible throughout the greater portion of the year, and to keep the atmosphere constantly humid. A slight shade, however, will be necessary during growth. The Camellia is naturally impatient of hot sunshine at that time; it then delights in partial shade, such as a shrub gets which stands upon the clearing of a wood, partly overshadowed and protected by larger neighbours. I always place my potted plants in an early vinery in the growing season, and no position is more suitable for them. The moist atmosphere and frequent syringings necessary when forcing Vines just suits Camellias. In dull, damp, sunless weather, however, the syringe should not be employed, or weak flaccid growth will be the result, which later in the season will affect the general appearance of the plants, and certainly impair their bushy shrub-like habit, which is the true characteristic of a well-grown Camellia. Drawn spindly growth when the plant is young results in naked leafless branches when old, and in order to regain symmetry the knife has to be used, but this will seldom be found necessary if abundance of air be given in the growing season. I am not an advocate for placing Camellias out of doors in the summer months, and to those who have sufficient house accommodation throughout the year I would say, By all means keep them indoors. Camellias may frequently be seen placed on the north side of hedges or walls. It is a mistake to suppose that the foliage will take any harm from the influence of the sun if the roots be sufficiently supplied with moisture. Plants which have been overpotted and ill treated produce a sickly yellow growth. Buds may be formed on such growth, and they often are in abundance, but the plants have not strength enough to withstand any sudden change of temperature or slight check, to which they may be subjected; the result is nearly all the buds fall. This frequently happens when the plants are introduced to their winter quarters, and people are surprised at the circumstance, but if one of the plants were turned out of the pots and the roots examined surprise would cease. The few roots that can be made during the summer time in a close uncongenial soil become completely ruined by the autumn rains.

Those who wish to grow Camellias well should begin with quite small healthy plants, they will then be able to lay the foundation of good specimens. Unless a good beginning is made no substantial success can be relied upon, for no after care will wholly compensate for injudicious treatment or neglect during the early stages of growth. Free healthy root-action is the main point to be secured, and in order to obtain this we must not be in too much haste, for the Camellia will not submit to being hurried. No plant more readily yields good results under painstaking culture, but it imperatively demands that its peculiarities should be studied. Healthy young plants in 48-sized pots are quite large enough to begin with. They may be procured fairly rooted. They should be dwarf, furnished with several shoots and well clothed with foliage. They may be wintered in a light house, in which good ventilation can be given, and all the flower buds should be removed. If the plants have been more than one season in the same pots the soil will probably be well filled with roots, and they may be advantageously shifted into a larger size. If, on the contrary, there be any scarcity of roots, or they appear to be in rather an unhealthy condition, the better way will be to go over them with a sharp-pointed stick, extract as much of the old soil as possible, and fill up with a compost of which I will speak shortly. This will induce the old roots to produce fresh fibres, and encourage the young rootlets to a more lively and healthy action. In this way an extra amount of vigour will be gained without the bulk of the soil being augmented. The drainage will also require attention, and placing the plant in a clean pot. If this be done as soon as the wood is ripened early in autumn, and whilst the roots are active, much will be gained, as in the spring when making their young wood they will be in a condition to be benefited by an occasional application of clear soot and guano water. Although liquid manure may be sometimes applied with advantage during the growing season, it must be used with judgment. A newly shifted plant will not require any stimulus, but if the head of foliage be large and the pot well filled with roots, a pinch of guano in the water given occasionally will be found to produce good results. No rule can, however, be laid down in this respect, practice and close observation will alone enable the cultivator to treat each plant according to its individual requirements. Soot water is the manure *par excellence* for the Camellia; there is no danger of souring the soil with it and it may be given with benefit at all times of the year, while the foliage

may be syringed with it beneficially. The best method of preparing it is to tic some soot up in a bag and place it in the water tank, and the properties of the soot will be extracted, and this clear water may be used for syringing, and will leave no stain on the foliage. Soot water, without stimulating rank growth, promotes the formation of firm sturdy wood, gives plumpness to the buds and colour to the foliage such as no other manure will produce, but these results will only be effected by its constant use and if prepared in the manner recommended.

The important matter of soil for Camellias now demands attention. A great variety of opinions exists on this subject. Some growers use loam without any admixture; others, on the contrary, advocate a mixture of fibry peat and loam, and some recommend other ingredients; whilst a few, but only a few, are willing to admit that loam may be nearly dispensed with. Loam, as procured in some localities, I have no doubt is excellent, but there are only a few samples which may be safely used in a pure state for Camellias. The indiscriminate use of loam produces, I believe, many disappointments and failures. A stiff soil requires much care in watering, and I have seen Camellias potted in loam, so called, which was but a few shades removed from clay. In the case of a plant in the open ground there is a free and natural drainage which prevents stagnation, but in placing a plant in a pot we give it a purely artificial state of existence, and must therefore endeavour to neutralise as much as possible the ill effects attending the circumstances under which it is placed. The best soil in which to pot a plant is in that which yields the most nutrition and at the same time favours the greatest amount of root-development with the greatest facility for preserving the same in a healthy condition. In stiff tenacious moisture-holding compost these requirements do not exist, and they should therefore be avoided, more especially by amateur. or others who may be desirous of growing Camellias, with whose peculiarities they may be but imperfectly acquainted. Experienced cultivators alone should use strong soil. I prefer a compost of a mixed character, and rather light than heavy. I wish to be perfectly well understood upon this point. I have grown good Camellias in a mixture of fibry peat intermixed with bog earth and charcoal. This compost does not encourage rank growth, but in it the leaves acquire good substance and a fine gloss, which can hardly be obtained in a soil of which loam forms the principal ingredient. If I had a choice of soils I would select a compost consisting of equal parts of fibry turf cut thinly from an old well-trodden sheep pasture, and peat, with sufficient sand and charcoal added to make the whole porous. This mixture will promote the development of both wood and foliage, and if proper drainage be provided and the plants are soundly potted, the watering pot may at all times be used with the greatest freedom.

Those in possession of old neglected plants may try to renovate them if they feel so disposed; and as the source of evil will generally be found at the roots they should be shaken out of the pots, as much of the old soil as possible being removed and the root cleansed. Old roots decayed at the ends should be pruned, the whole dressed with sand, and put back into as small a pot as the roots can be got into, using very sandy light soil and insuring perfect drainage. They should then be placed in a slight bottom heat where plenty of air can be given, syringed on warm days and shaded from the hot sun. I am acquainted with a collection of Camellias in this neighbourhood which were restored from a miserable state to fine health by treating them in the manner I have mentioned. They have lately been planted out, and they are at the present time covered with blooms, the admiration of all who see them. With respect to the best shape for Camellias, individual tastes and fancies must of course be consulted. They may be grown as is often seen in the form of standards, or in that of bushes or pyramids, the latter I consider the most desirable for pot culture. Pyramidal Camellias are, however, not often met with. If, however, the foundation of a pyramid be properly laid there is no more difficulty in preserving that form than any other, and with a little care in training pruning will hardly ever be found necessary. A good shaped pyramid densely furnished with foliage and covered with bloom is an object worth taking some pains to secure, and one which well repays any extra care and labour that may have been bestowed upon it.

As regards the time for repotting Camellias cultivators differ in opinion. Some think it should be done directly the flower buds are formed, whilst others are equally persuaded that the right season to shift them is directly the blooms fade and before the young growth commences. I am in favour of this, as during the spring root-action is much more vigorous than at any other time, and not only this, but the plants will then better bear any slight check which they may receive than when they are more advanced. The assistance, too, that the fresh soil affords when given them early must tell favourably upon their growth, and consequently on the number of blossom buds which they are able to form over what they would have done had the potting been deferred till a later period.

I have up to the present dealt with the Camellia entirely as a pot plant: I will, therefore, refer to it as a permanent plant, or as a plant placed in a permanent position in the soil. Excavate for a border to a depth of 2 feet or so, and as the plants require abundance of water at all times of the year, it is very important that they have free and efficient drainage. The best way to provide this is to place 6 inches of soft broken bricks, and upon these a layer of rough turves to insure the crevices being kept clear. Fill up with the same compost as previously spoken of, but in a coarser state than advised for potting, also add a liberal sprinkling of crushed bones. The question may be asked by some, Why use the soil in such a rough state in making up the border? The tendency of all soils that lie long is to lose their fibre and general porosity, and especially when subjected to heavy and repeated waterings like that of a border in which Camellias are grown. There is one other thing, however, which

must be avoided, and that is leaving no hollow places or crevices when filling in whereby the water may effect its escape without penetrating the whole mass; for if this takes place plants that appear to have had a good deal of water given them get little or none, and frequently languish for want of moisture at a time when they are supposed to be abundantly supplied. In turning the plants out of the pots for the purpose of planting them out, the crocks at the bottom should be carefully pricked from amongst the roots, and as many of these should be liberated and spread about in the new soil as can be done without risk of breaking or injuring them. They should then be slightly covered with some of the finer portions of the soil, after which the final filling-up of the whole border may be proceeded with. A fair treading will make all complete, except a good watering through the coarse rose of a pot in order to settle the soil about the roots and to give them a start. To those who desire to grow Camellias well I would say, Do not attempt to force them by means of artificial heat; the only way to get them to flower early is to start them into growth, and if this be persevered in for two or three seasons they acquire the habit of flowering in the autumn and winter months, instead of the spring. By no means expose them to the drying influence of a March draught, or even let them know the wants of abundant moisture. You will then be rewarded with a grand display of lovely blossoms. Those blooms are widely sought after to grace the hand of the bride at the altar, to adorn the hair of the noble lady at a concert, and to mark a last tribute of respect to a departed friend. Give the plants plenty of light, abundance of air, and good food judiciously applied, then I think we shall be able to unite with Longfellow in saying,

"lowers still faithful to their stems their fellowships renew,
The stems are faithful to the roots that worketh out of view,
And to the soil the roots adhere in every fibre true."

—J. H. WALKER.—[Read at a meeting of the Notts Horticultural and Botanical Society.]

NOTTS HORTICULTURAL AND BOTANICAL SOCIETY.

THE monthly meeting of the members of the above Society was held at the Society's rooms, Mechanics' Institute, Nottingham, on Wednesday, February 12th, when Mr. J. H. Walker of Hardwicke House Gardens, Nottingham, read a paper on the "Cultivation of the Camellia." There was a large attendance of members and others interested in the culture of this popular flower. Mr. J. R. Radford was unanimously voted to the chair, and amongst those present were Messrs. J. R. Bush, C. W. Gell, S. Thacker, Vice-Presidents; Messrs. J. Edmonds, Bestwood Lodge; T. Edington, Woodthorpe Grange; T. Massey, Mapperley Hall; N. German, Malvern House; Graham, Forest House; Ingram, Messrs. Sander & Co., London; Mee, Park Nurseries; R. Jackson, Derby; and many others. There was, as usual, upon the tables a good display of Orchids, Camellias, and other exhibits, noticeable amongst them being a good example of *Dendrobium Wardianum*, carrying twenty-eight fully expanded flowers on a bulb, by Samuel Thacker, Esq. The President of the Society, T. B. Cutts, Esq., Malvern House, Nottingham (gardener, Mr. N. German) exhibited a collection of flowering Orchids, amongst which were several small but well-flowered examples of *Odontoglossum crispum*, *Odontoglossum Insleayi leopardinum*, *Odontoglossum maculatum superbum*, *Lælia harpophylla*, *Phalænopsis amabilis*, &c., and fine spikes of *Odontoglossum grande*, *Cœlogyne cristata*, *Lælia autumnalis*, *Zygopetalum Mackayi*, the latter of which had been in flower since November.

Mr. Edmonds, gardener to the Duke of St. Albans, Bestwood Lodge, showed a gigantic variety of Brussels Sprouts of excellent quality, measuring 3½ feet in height, and densely furnished with sound sprouts of a beautiful green colour, and is said to be of a tender fine flavour when cooked. This splendid variety, which is named Northaw Giant, was much admired; it was raised by Mr. J. May, gardener to Captain Le Blanc, Northaw House, Barnet, near Hereford, and is now being sent out by the raiser. Apart from this, Mr. Edmonds had cut blooms of *Dendrobium Wardianum*, of great size and fine colour; also cut blooms of Camellias, noticeable amongst them being fine examples of Duchess of Berry and Cup of Beauty. Mr. Edington, gardener to Hy. Ashwell, J.P., Woodthorpe Grange, brought a collection of cut flowers and a poor variety of *Dendrobium nobile*. Mr. Walker, gardener to J. W. Lewis, Esq., Hardwicke House, exhibited sprays of *Passiflora quadrangularis*, which has been continually blooming through the winter. Mr. C. J. Mee, The Park Nurseries, Nottingham, had blooms of *Camellia alba plena*, and moderately good plants of double-flowering Primulas, possessing no special merit. Various other exhibits of a less interesting character were made, and much interest was evinced in Mr. Walker's paper, which provoked a very lively discussion, in which Messrs. Edmonds, Thompson, Edington, Thackers, German, and others took part, and to which the reader of the paper replied. At the conclusion hearty vote of thanks was accorded the author and to the Chairman for presiding.

During the evening the Hon. Secs., Messrs. J. Don and E. Steward, announced that Mr. J. E. Musson, F.R.H.S., of the Nottingham University College, had arranged to give a course of lectures upon botany to the members of the Society, the first of which was to be held last Monday evening. It was also announced that the Committee had arranged to hold the annual show in July, and that schedules were now in course of preparation.

INSECTICIDES.

AT the recent fortnightly meeting of the Manchester Horticultural Improvement Society, Mr. Griffiths Hughes read a paper on Insecticides. The President, Mr. Bruce Findlay, who was in the chair, said that one of the greatest misfortunes which could happen to a gardener or a farmer was to have his crops assailed by insects. One of the greatest judgments that befell the ancients was the sending of divers sorts of flies among them, and we read that "their increase was given to the caterpillar and their labour unto the locust"—and poor Spain, who had been literally

turned upside down through terrible earthquakes, had during the past year lost something like £400,000 through the ravages made amongst their Vines by means of that terrible scourge the phylloxera. Whether an infallible agent had yet been discovered for the destruction of plant pests it was impossible to say; unfortunately, in some cases the means employed not only destroyed the insect but the plant also. We all know that very active measures are essential in order to keep down the noxious insects.

Mr. Hughes then read his paper. All genuine insecticides, he said, ought to be so effective as to dispel any idea of failure when such preparations are applied in a proper manner. From his own personal observation he was led to believe that failure in the use of insecticides for the cleaning of plants, and thus getting rid of insects and blight, is more due to the want of knowledge in the preparation of washes than should be attributed to the insecticide itself, and also to the absence of experience on the part of the operator in its application, so as to secure the results obtainable when such is used by practised hands. When carrying out his experiments in the production of Fir tree oil he made the Manchester water the standard of the quality of water suitable for the preparation of washes to be used for cleaning plants, and, therefore, prepared the insecticide accordingly, and it is pretty well known that all preparations which are suitable for cleaning the foliage of plants should have an alkaline reaction just in a sufficient quantity not to injure the foliage or the colour of the petals of flowers. He succeeded admirably so far, and completed his preparation in every particular so as to produce an insecticide which should answer every purpose required, and be a boon to the horticulturist. But when he sent it out as a perfect article he soon found that the water used in different parts of the country varied so considerably that when mixed with the insecticide it quite altered its character and usefulness, and thereby brought about differences of opinion as to its real value. It was important that this should be well understood, for so long as water which is hard, and contains lime and other salts, is used in the preparation of washes having an alkaline reaction, so long will the operator be subject to failure in the cleaning of his plants, and also run a great risk of having the foliage spotted or otherwise damaged. It is not generally known that spring water is not quite so good for general horticultural purposes before it is boiled as it is afterwards, but such is the case, as for purposes of cleaning and mixing with insecticides there exists a very wide and important difference between the two; and he would recommend that all the water used for such purposes be taken from the boiler or hot-water pipes, or otherwise boiled, and be used when cool. Uniform results might then be expected.

Turning now to the means of destroying insects which infest both hard and softwooded plants, he said that a Vine house cannot be cleared of the mealy bug unless persistent attention be given to it, and the Vine itself while dormant subjected to an application of insecticide made nearly double the strength of that used when it is in full leaf. In houses other than those for Vines the same persistent treatment should be followed, and the greasy exudations of the bug which are deposited upon the foliage and stems of growing plants should be removed by insecticides applied with a small brush. For softwooded and quick-growing plants a comparatively weak solution only is required, provided the application be made in the evening after the sunset, or in the very early morning. The shading of plants under glass from the direct action of the sun's rays will assist very materially in keeping down insects. After observing that petroleum oil when made soluble in water does not in his opinion possess any property which can make it valuable as an insecticide, he said that in tobacco and many of its preparations will be found a very useful and efficient insect-destroyer when applied in the form of smoke. For destroying caterpillars on Gooseberry and Currant bushes there is no better or cheaper remedy than the powder of white hellebore. In conclusion, he said that as to vermin in glass houses, the frequent disturbance of the nests and breeding haunts is the most effectual method of dealing with them, for however many of the stray ones may be killed by the aid of the most approved appliances, their total extinction will only be attained by doing away with that for which they live—viz., the facility for propagating their species.

THE ENGLISH ARBORICULTURAL SOCIETY.

[Abstract of a paper read to the members of the Society at their first annual meeting in Carlisle by Mr. Wm. Clark.]

I PROPOSE to explain our aim as a Society under three divisions—viz. First: Our aim as this affects landowners. Second: Our aim as this affects wood foresters. Third: Our aim as this affects our own nation.

LANDOWNERS.—The primary consideration of landowners must naturally be a financial one, and this is commonly supposed to refer to the value of timber cut and sold from a given area; but seeing this part of the subject must vary very much owing to the local or other demand, and being subject to much difference of opinion, I would rather allow one of our experienced members to enter upon this phase of the question more minutely. Sufficient for me now to note that this question of finance is not determined entirely by the produce or the price per foot of any given timber crop. Leaving this part of my subject out of consideration, I will now refer to some other matters as important as the question of finance. These I will treat under five divisions:—The value of shelter plantations. The value of plantations for appearance. The value of plantations for game. Hygiene and superfluous moisture. Possibility of new markets for the produce.

SHELTER PLANTATIONS.—These make no appearance on an estate book as an annual asset, but if by any means they were obliterated from an estate, it is very evident that the rent roll would be sensibly diminished, hence a claim for value on this account can be fairly established. Some estates are patterns in this respect: and farmers are quite able to appraise

ciate their value, the more so as the fattening and rearing of live stock is now the main resource for profit to the farmer; hence all that conduces to the comfort and health of his stock is duly appreciated and valued.

APPEARANCE.—The improved effect of planting for appearance is closely allied to that of shelter, but differs only in this respect, that it affects the proprietor only, in the first place, because it secures beautiful and pleasant surroundings; and secondly, it commands its own value in the event of a sale. I have been also casually reminded that the effect of some such scenes as forest scenery has often been the theme of the poet and the painter, which without the cause would have been lost to the world.

GAME.—The increase of our population necessarily opens out a great demand for all kinds of food, and now game in numerous cases is actually of more value than any other kind of live stock, even if no intrinsic value was placed on the sport. This more particularly refers to our bleak and mountainous districts where the aid of the planter is more and more required, and his skill put to the greatest test. Here again we have a value that we do not see directly placed to the credit of the plantation account, but nevertheless belonging to it, and really more valuable at the present time, owing to the great objection to ground game, as that is more generally understood from winged game, which as yet creates no great injury to anyone interested in the matter.

HYGIENE AND SUPERFLUOUS MOISTURE.—The planting of trees is valuable in taking away superfluous water—a very important matter, as it improves an estate as a healthy and desirable residence. Some time ago great things were spoken of the Eucalyptus globulus, or Blue Gum Tree of Australia, as possessing the valuable quality of preventing fever. On this matter a difference of opinion exists, but no difference of opinion exists in that its greatest value lies in clearing the ground of its superfluous moisture, hence the malaria arising from stagnant water is altogether prevented, and as a consequence fever cases are very much reduced or entirely prevented wherever it abounds. Fortunately we have native shrubs and trees which, if not so peculiarly suited to the purpose of absorbing the superfluous moisture and correcting the pernicious exhalations of marshy soil, will yet thrive there and do their work fairly well. A plantation principally composed of Willows with Poplar, Birch, and Alder, will be found an excellent remedy for wet and moist land, and even on the only consideration of profit will be found a good investment. The Coniferæ also, especially the Fir, are adapted by Nature expressly to remedy the evil tendencies of the situations in which they thrive. As in the Carolinas, the Pine barrens are the health resort and sleeping place of those who cultivate the lower and more fertile soils, but dare not sleep there till after the first frost, for fear of the terrible country fever; so a grove of common Fir or other turpentine-producing trees gives out exhalations known by experience and affirmed by recent scientific discovery to afford the best possible preservative against disease of the malarial type. In fact, some writers apparently incline to believe that a Pine wood might prove quite as healthy a resort as the best of mineral springs. The Scotch Fir planted in rows for some hundred yards round the edges of a pestiferous marsh might do not a little to intercept the unwholesome exhalations, and protect the inhabitants of the neighbourhood, while the Willow, swiftly growing as it is, would gradually absorb the superfluous moisture and prepare the ground for an advance of the Coniferæ. No one who has noted the character of the ground immediately under a group of Scotch Firs can have failed to observe how the fall of their peculiar sharp needles differs from that of ordinary deciduous leaves, producing not a rich moist leaf mould specially nutritious to grass and flowers, but a mass of loose, dry, hard fragments through which even the exhalations of a moist soil would hardly penetrate. A Dr. Hough writing on this subject demonstrates the sanitary effects of woodlands not only in clearing the "bottoms" of many of the Western States of malarious fevers, but in rendering habitable the disease-stricken valleys of Italy and Algeria—a state of matters produced by the cutting down of the woods which flourished in these countries in days of old.

NEW MARKETS FOR THE PRODUCE OF OUR FORESTS.—Many of my hearers have, no doubt, paid a visit to the Forestry Exhibition lately held in Edinburgh, which, taken as a whole and considering the narrow sphere which could be called into play, was a credit to the promoters. One thing was very evident, that there is a large field for ingenuity and enterprise for native timber, and many of the articles so manufactured were really useful, creditable, and desirable. One exhibit, the stand of articles made from Willows, was a perfect surprise, and showed what a variety of articles in daily use are manufactured solely from the common Willow. The other exhibits were too numerous to particularise, but mention might be made of the varied character of the articles, from the plain requisite of the dairy to the beautiful and tasteful articles manufactured of polished native timber mounted in silver. Were these articles in greater demand this would cause an increased inquiry for such timber as Sycamore, Birch, Oak, Ash, &c., and no doubt a corresponding increase in value. A passing note might be made of the beautiful grain some woods of native timber show when polished; and were these specimens oftener exhibited I have no doubt a corresponding demand would follow. A bazaar was lately held in Carlisle solely for the sale of ornamental boxes, &c., made from Cedar direct from the land of Palestine. Now the sale of these was caused by their sacred or hallowed associations. Against this, in our case, ship these same kind of goods to any part of our empire where Englishmen abound, and offer them as manufactured from the hills and dales they love so well, though far away, and you awaken a similar echo in many hearts. Again, one of our experienced members lately suggested to a railway superintendent that his duty was to encourage the use of native timber for railway purposes, seeing that with the aid of creosote our commonest native timber could easily be made as lasting as any foreign timber.

Having thus briefly touched upon the aim of this Arboricultural Society in bringing such matters home to the landowner, I now proceed to consider our aim as a Society in regard to the employé—viz.,

THE WOOD FORESTER.—The duties of a Wood Forester are very varied, and it is astonishing that so much knowledge is expected from one individual. In the first place, he must possess a knowledge of the management of forest tree plantations and their proper planting, thinning, &c.; he must know the different kinds of trees to suit different soils; he must be a practical drainer, as the ground must be properly and sufficiently drained; he must be able to keep his various estate books, such as a time and a work

book; be able to calculate the price of timber, and he must be able to measure the same correctly; he must be able to prepare estimates of the value of draining, planting, fencing, &c., and submit reports of the same; he must possess a knowledge of machinery and the care of a saw-mill, which, in nearly every case, is driven by steam power. As a rule, he is expected to cut out timber for fencing; to make or superintend the making of field gates, hurdles, &c.; and, to sum up the whole, it means wood merchant, engineer, joiner, nurseryman, book-keeper, contractor, and drainer, all combined in one single person; and with all this knowledge he is generally considered to be a very modest individual on an estate. If such a class of men exist with the limited training and opportunities which can be found within their reach, how much better the same men would be if an institution such as a School of Forestry existed, where any young man, after passing through the plain details of planting, pruning, felling, barking, measuring, &c., could be ushered into a sphere where the higher duties of his business would be learned, and where he could get the assistance of whatever learning or science can give to assist him in the execution of his duties in after life. The Society also aims to bring the forester in contact with other foresters, so that by discussion and the reading of papers by practical men in his own business, he may have his mind encouraged to greater study, and gain by the experience of others valuable lessons in regard to many matters he may have to contend with. We have a very trite adage:

"Providence helps those who help themselves,"

and in promoting an Arboricultural Society where foresters and all who are interested in arboriculture can organise and assist each other, I believe this adage in our case can be more effectively carried out. Union is strength, and because we are necessarily much scattered over the country, it behoves us the more to be drawn together in the bonds of a Society.

OUR AIM IN REGARD TO THE GOOD OF THE NATION.—Forestry has a national value, and it follows that any encouragement in the practice is a national gain. I have already referred to forestry in regard to hygiene, which is surely a national matter, but this is now much better understood and valued, particularly in towns, where open spaces are now acknowledged as necessary for the health of the inhabitants. I may also refer to the effect of plantations on the rainfall of a country, now a fact fully proved, that when the natural forests disappear to any great extent drought begins to reign to an alarming degree, and the produce on the land is destroyed for the want of moisture. This fact is now so apparent in some parts of America that a scheme of re-forestation is now an acknowledged duty of the American Government. A writer of repute states in a recent number of a scientific magazine: "The true basis of national wealth is not gold but wood." This assertion is reasoned out by the following facts:—The great table land of Central Asia was in historic times as fertile as a garden, and produced food for the support of great and populous nations; the reckless destruction of the forests has converted the great plains and valleys of that part of the world into dreary deserts which afford sustenance to only a few scattered tribes of nomads. Immense herds of sheep and goats, computed at 15,000 in each herd, were the instruments in this terrible transition. These immense herds cropped the seedling trees so that natural reproduction was arrested; the mature trees in course of time decayed, the climate became arid, the water courses dried up, and the land ceasing to bear its fruit in due season finally became a howling desert. I could also refer to the supply of timber in the future, seeing that the farther we cut our supply of timber from the seaboard the greater its value must become, hence it becomes a national duty to provide a supply for the coming generation. I am of opinion that this must become a national affair, and hope it will rest with a government of England to clothe our mountains with timber, either by the loan of money at a low interest to the proprietor, or to take the matter into their own hands. Take our Cumberland fells and clothe them with the Larch and Pine tribe, and what a mighty change would come over the hills and dales now left to support a few black-faced sheep in summer, when compared with all the advantages I have referred to, let alone the value of the timber when arrived at a stage of maturity. M. Boppé, Inspector General of Forests in France, recently paid a visit to this country to report on our Highland forests, and in the course of his report he states—"If a line were drawn from Greenock to Perth, there would be found north of the boundary no less than five millions of acres at present regarded as mere waste, which is capable of being converted into valuable timber forests." If that were done and the forests worked on the German system, they would supply an annual growth of timber, fifty or sixty years hence, more than double that imported from Russia, Norway, Sweden, and America. One-half of this area under trees would also always be open for grazing purposes, and from the shelter and the superior quality of the grass found in the forests, ample food would be afforded to twice as many head of cattle and sheep as the same quantity of moorland or exposed pasture could supply. Still further, the working and management of the forests and the development of hundreds of industrial enterprises connected with them and their products would afford a steady means of employment and subsistence to a large proportion of the inhabitants of the Highlands, who at present eke out a precarious living as crofters. We also require a trained class of men for our Indian plantations, and if forestry were more fully and intelligently pursued in this country we could furnish any number of competent men. At the present time our candidates have to go for two or three years to Germany or France, where this knowledge is supposed to be much better attained than in England, hence it becomes a national question to be able to train our own candidates; and this can only be done by raising forestry to a higher place than it yet occupies in this country.

BARRENNESS OF THE PAMPAS.—In the admirable address of Prof. Asa Gray at Montreal he alludes to the singular absence of trees and herbaceous plants throughout the Pampas or vast level plains in the South American continent, and he endorses the opinion of Mr. Darwin and Mr. Bell that this absence is due to the fact that the only country from which they could have been derived could not supply species adapted to the soil and climate. As this is a subject to which I paid considerable attention during a long residence in South America, I venture to call attention to

the explanation of this phenomenon, which my observations gave rise to as described in my "Visit to South America," 1878. The peculiar characteristics of these vast level plains, which descend from the Andes to the great river basin in unbroken monotony, are the absence of rivers or water-storage, and the periodical occurrence of droughts, or "siccós," in the summer months. These conditions determine the singular character both of its flora and fauna. The soil is naturally fertile and favourable for the growth of trees, and they grow luxuriantly wherever they are protected. The Eucalyptus is covering large tracts wherever it is enclosed, and Willows, Poplars, and the Fig surround every estancia when fenced in. The open plains are covered with droves of horses and cattle, and overrun by numberless wild rodents, the original tenants of the Pampas. During the long periods of drought which are so great a scourge to the country, these animals are starved by thousands, destroying, in their efforts to live, every vestige of vegetation. In one of these siccós, at the time of my visit, no less than 50,000 head of oxen and sheep and horses perished from starvation and thirst, after tearing deep out of the soil every trace of vegetation, including the wiry roots of the Pampas Grass. Under such circumstances the existence of an unprotected tree is impossible. The only plants that hold their own, in addition to the indestructible Thistle, grasses, and Clover, are a little herbaceous Oxalis, producing viviparous buds of extraordinary vitality, a few poisonous species, such as the Hemlock, and a few tough thorny dwarf Acacias and wiry rushes, which even a starving rat refuses. Although the cattle are a modern



Fig. 28.—*Sollya linearis*.

introduction, the numberless indigenous rodents must always have effectually prevented the introduction of any other species of plants, large tracts are still honeycombed by the ubiquitous biscacho, a gigantic rabbit, and numerous other rodents still exist, including rats and mice, Pampas hares, and the great nutria and carpincho on the river banks. That the dearth of plants is not due to the unsuitability of the subtropical species of the neighbouring zones cannot hold good with respect to the fertile valleys of the Andes beyond Mendoza, where a magnificent hardy flora is found. Moreover, the extensive introduction of European plants which has taken place throughout the country has added nothing to the botany of the Pampas beyond a few species that are unassailable by cattle, such as the two species of Thistle which are invading large districts, in spite of their constant destruction by the fires which always accompany the siccós.—EDWIN CLARK (in *Nature*).

SOLLYA LINEARIS.

THE attractive little plant represented in the annexed engraving is the prettiest of the few species constituting the genus *Sollya*. Like its relatives *S. heterophylla* and *S. Drummondii* it is a native of Australia, whence it was introduced about forty years ago. In habit it is slender and scandent, with linear bright green leaves and very numerous deep blue pendulous flowers, which are succeeded by long seed pods that remain on the plant for a considerable time. The plant is easily cultivated, and when trained over a pyramidal trellis, as we recently saw a specimen in the temperate house at Kew, it is really charming. It thrives in a greenhouse temperature either in pots or planted out, and

requires a soil composed of loam and peat with an admixture of sand, or the peat may be omitted.

ROYAL HORTICULTURAL SOCIETY.

SCIENTIFIC COMMITTEE.—Present: Sir J. D. Hooker in the chair; and Messrs. Grote, Beddome, A. Michael, Pascoe, Smee, Murray, Ridley, Masters, Llewellyn, Loder, and Wilson.

Sclerotoids in Potatoes.—The following communication was received from Professor Traill, who had used various re-agents in testing the nature of these bodies, as suggested by Professor Foster at the last meeting:—

"Since I wrote in the month of January in regard to the result of my experiments on the sclerotoids in the leaves of diseased Potatoes, using for these experiments material given me by Mr. A. Stephen Wilson, I have continued and extended my observations. I have made use of several additional tests, and have found the results yielded by them confirm the conclusion that the bodies in question are masses of protoplasm coated with a deposit of oxalate of lime. As the subject is of much practical interest in its bearing on the propagation of disease in the Potato plants I subjoin a description of the results of the tests employed by me in addition to those previously mentioned. The former tests were also repeated, and gave quite the same results as they had done previously.

"In every case, except where specified, the bodies were teased from among the tissues in which they lay imbedded, so as to allow of certainty that the same body remained under observation during the whole course of operations to which it was subjected; nitric acid was then added in sufficient amount to dissolve the oxalate of lime, and the excess of acid was carefully washed away before any other re-agent was added. In every case where the body was so isolated, and where care was taken to prevent its escape from the field of the microscope, there remained a nearly transparent finely granular body, as described in my former communication. Nor was it difficult after the situation of the body had been carefully noted with relation to the surrounding objects to detect it again after the slide had been moved and the body was again brought into the field of vision; but where such care had not been taken it was frequently very difficult to rediscover it, and it is easy to understand how one might suppose that nothing remained after the action of nitric acid.

"The residuum, as I shall call what remains after the removal of the oxalate, retains nearly the size and form of the entire sclerotoid; but no true cell-wall can be detected even with the most careful examination—i.e., no cell-wall separable from the rest of the mass. Yet, as the mass retains its form in water and in other fluids, and resumes its form after moderate pressure has been made on the cover glass, the outer surface, like a primordial utricle, must serve as a wall.

"The residuum is faintly yellowish, and on running in dilute solution of ammonia this colour becomes slightly deepened; dilute ammonia did not dissolve the mass.

"Dilute potassic hydrate did not markedly alter the appearance of entire sclerotoids, but it dissolved the residuum more or less.

"Acetic acid, osmic acid, and chromic acid all rendered the residuum in some degree more visible, diminishing its transparency. Osmic acid changed the colour slightly; and chromic acid rendered it yellower.

"On running in a solution of iodine and potassic iodide the residuum became pale brown or yellowish-brown, being rendered very much more easily detected, though not so dark as the contents of the Potato leaf cells.

"Solutions of safranin and of aniline blue stained the residuum, though less dark than the cell contents of the leaf tissues.

"Picocarmine had little effect on either the residuum or the leaf cells, but it is not of general use in vegetable histology.—JAMES W. H. TRAILL."

Mr. G. Murray, having independently examined these bodies, reported as follows:—

"I have to report to the Committee than in compliance with its reference to me on the subject, I have renewed my inquiry into the nature of the bodies which Mr. Stephen Wilson calls 'sclerotids' of the Potato disease. It will be remembered that the result of my previous examination of these bodies was the discovery that they consist of oxalate of lime, and my opinion was (and, it may be said, still is) that they are intrinsic products of the Potato plant. Since that was announced Mr. Wilson has again addressed the Committee on the subject. He accepts the oxalate of lime, but states that in addition to it there is present a substance which he asserts is protoplasm; and this he regards as establishing again his views as to the connection of the bodies in question with *Phytophthora infestans*. Professor Traill has also sent you a report in which he states that, after dissolving the oxalate of lime, a substance is left which may be stained with magenta. He also judges this to be protoplasm.

"Mr. Worthington Smith, working independently, has made the same observation, and has furnished figures illustrating the aspect of the objects. His contention is that we have here a central mass of protoplasm encrusted with oxalate of lime. In this view I shall join with him Mr. Wilson, and also Professor Traill, who has 'no doubt that the sclerotoids are masses of protoplasm coated with calcium oxalate, probably in the form of minute raphides.'

"But for this unanimous statement that the substance in question was contained in the oxalate of lime, the appearance might have been explained without further investigation. However, I proceeded to carefully repeat these experiments with the bodies strictly isolated from the tissues, and giving a clear, definite outline, precisely as described by the above observers. After treatment with dilute nitric acid there was no difficulty in finding the substance referred to, and none in repeating the staining process, but I failed entirely and absolutely to find the smallest evidence that this substance was contained in the body. The statement that it is so contained is the merest assertion. Obviously if it were the case it would suit Mr. Wilson's theory. If the protoplasm were outside it is equally obvious it would bear out my interpretation. I can prove that it is so. In order to demonstrate the presence of this substance, it is not necessary to remove the oxalate of lime with nitric acid. The observer has only to isolate as well as he can one of these bodies, and apply iodine, for example, to obtain the desired stain. This will appear as a delicate colouring, and not with the intensity that would result were the whole mass to take up the stain. This

shows (and I have repeated the test over and over again) that the stained substance is outside the oxalate of lime, and the natural interpretation is, that it is but the remains of the original cell contents of the Potato leaf-cell in which the oxalate of lime body was formed—adhering to it over the surface. A deal of trouble might, therefore, have been saved but for the assertion that the oxalate of lime contained a central mass of protoplasm.

“In addition to this part of the inquiry, I have looked into the matter from another point of view, and evidence has been obtained which, I venture to think, will prove to be of interest. A week or two ago Mr. Carruthers placed in my hands a letter from Dean Buckland (dated July 19, 1847) to Robert Brown, enclosing leaves, &c., of a Potato plant, and asking, ‘Is the enclosed the same affection of the Potato leaves as that of the two last years?’—meaning the Potato disease. I examined the leaves, and found no sign of Potato disease, but, abundantly present, Mr. Wilson’s sclerotoids. Thus we see that Mr. Wilson was anticipated even in his mistake.

“Mr. Carruthers then suggested to me that I should examine Potato plants preserved in Sir Hans Sloane’s herbarium. We found four plants which had evidently been healthy and vigorous when collected. From each I removed a very minute fragment for examination. The first one was from the King’s garden at Montpellier, collected by Dr. Charleton (Charleton was born 1619, and died 1707). It contains Mr. Wilson’s ‘sclerotoids’ as abundantly as Mr. Wilson’s own specimens. The next was a plant collected by Bœrhaave (Bœrhaave was born 1668, and died 1738), and it also proved as fertile in the matter of ‘sclerotoids.’ The next was one of Plukenet’s plants (Plukenet was born in 1642, and died 1706?): it contains them too, but the fragment selected shows only a few. Finally a fragment was taken from a plant ‘collected about 1660,’ as labelled in Sir Hans Sloane’s handwriting; and it, like the last named, contained these bodies which Mr. Wilson wishes to connect with the Potato disease. The four fragments of antiquity could all be placed under an ordinary coverglass—they were selected from the plants at random, and none of them disappointed me. Unfortunately, I cannot remove the slides from the Museum, but the specimens have been examined by Mr. Carruthers, Mr. Bower, Mr. Ridley, Mr. Geddes, and Dr. Masters. Mr. Carruthers and Mr. Bower have also kindly witnessed the tests described above, and I need not add I shall be happy to exhibit the whole matter to Mr. Wilson, or to anyone whom he may appoint.—GEORGE MURRAY.”

Buds on Orchid Roots.—Major Lendy exhibited a plant of *Phalænopsis* bearing small buds on the aerial roots; a very unusual phenomenon, though not unknown. They, however, are too minute to be of use as a practical source of propagation. The plant was figured in the *Gardening World*, vol. i., p. 364.

Pinus Massoniana.—Sir J. D. Hooker exhibited a branch bearing a large cluster of cones. He remarked that they were usually borne singly on the young trees, but the normal character appeared to be in clusters when they grew older, as figured by the Japanese.

Masdevallia leontoglossa.—This Orchid was exhibited by Sir Trevor Lawrence, and the Committee awarded it a botanical certificate.

Decay of Cedrus Deodara.—Mr. Murray reported upon the mycelial growth found under the bark of the trees which had died, and which were exhibited at the last meeting. He found it to be in all probability a species of *Polyporus*, and which was parasitic upon the cambium layers. It was his opinion that the fungus was quite competent to cause the destruction of the trees.

Narcissus pachybulbos.—Mr. Loder exhibited [a truss of this] Algerian plant. The flowers are white and fragrant.

Chinese Wax.—Mr. MacLachlan exhibited specimens of *Fraxinus edinensis* and *Ligustrum lucidum* (?) attacked by *Coccus Pela*. He remarked that it appeared to be an agglomeration of male insects, and not a secretion from the female scale, as is usual. The wax was an important commercial product, and Sir J. D. Hooker observed that our information on this subject was derived through the great facilities offered by the Foreign Office in inquiring into the sources of various native productions of foreign countries. Mr. MacLachlan observed that there was another source of a similar wax from a female coccus from South India.

Mormodes Diseased.—Mr. Smee exhibited specimens of leaves apparently attacked by some insect. They were referred to Mr. Michael for examination and report.

Castor Oil Fruits.—He also exhibited some fruits and seeds which had ripened in the open air. The latter were rather small, but apparently quite sound.

Roots of Rhododendron Diseased.—Hon. and Rev. Mr. Boscawen sent some roots which appeared to have decayed through wet; no fungoid growths could be detected in it.

PLUMBAGO CAPENSIS OUT OF DOORS.

In reply to “A. E., North Devon,” I am pleased to give him the information he desires. I would advise him not to turn his plants out into the flower garden this season, but to grow them on by every encouragement during the summer, and let them flower if they will. I will state how my plants have been treated. They were taken up from the flower garden before any frost touched them and potted carefully in loam and leaf mould. They were then well watered and placed against the back wall of a vinery, where they have had all the light possible. In January the smallest shoots were shortened to half their length and the others to about two-thirds. The plants are now breaking into growth, and will be brought into the greenhouse and encouraged to grow for some time, as it is from the extremities of these shoots that the flower comes. A short time before planting out they will be hardened, but they must not be so early exposed as many of the ordinary bedding plants, as they are more tender. About the last week in May they can be planted and at once watered and their branches tied out. If done carefully they will not flag, and they will begin to show their trusses of flower. On the

evenings of hot days a syringing with clean water will help them, and no doubt the plants will show a few suckers; if so, these should be encouraged, as they will be wanted for another year. My plants are already doing so. The plants appear to thrive in a good proportion of leaf mould mixed with the border soil when planted out.

My plants are, as “A. E.” assumes, three years old, and when planted out were nearly 5 feet high, and as much in width when tied out. I would advise “A. E.” to raise enough plants to have one lot under the other in age coming on, so as to ensure having good plants to put out, for, as a rule and to be safe, most of the growth of the plants must be made before they go into the garden.—THOMAS RECORD.

LÆLIA ANCEPS.

WHILE reading the article in the Journal on page 68 on winter-flowering *Lælias*, I noticed that the length of the flower spikes of *Lælia anceps* was stated to be frequently 18 inches in length. This is short in comparison with what are grown here. We have several spikes exceeding the length named. One large plant about 2 feet 6 inches through has borne twenty-one spikes, the longest of which measured 4 feet, while the shortest was 2 feet long, some of the spikes bearing four blooms. Other plants in 10-inch pots had similar spikes. Perhaps it would be interesting to state that the length of several of the leaves are 10½ inches and 3 inches broad, the bulbs measuring 6½ inches long and 4 inches round. I do not know if these figures are anything above the average, but state them to get the experience of others, and to gain information. I send a spike (the last we have), which is just over 4 feet long. Perhaps there are other varieties with shorter spikes.—J. S. UPEX, Foreman, Milton.

[*Lælia anceps* varies in the length of the spikes, but that you sent is an uncommonly long one, and the plant must be very strong.]

COVENT GARDEN FLOWER MARKET

THE business in flowers is just at this season of the year at its lowest ebb, and advantage is being taken of the fact to push on with all speed the extension of Covent Garden Flower Market. We gave some account of this work in the summer, and we then referred to the remarkable development there had been in the London flower trade during the past few years. Further evidence on this point has since been given by the remarkable fact that, although the new portion of the market is not yet built, every stall provided for in the plans is already let. Only some ten or fifteen years ago a few rickety old sheds in an out-of-the-way corner of the market served for the wholesale flower trade; and when the commodious new structure was erected on the site of the old sheds, it was rather in excess of the requirements of the trade, and it was expected that it would be amply sufficient for many years to come. Various forces have been combining, however, to render the expansion of this interesting business very rapid. Among other things the floral fancies of Ritualism are the first to tell upon the year’s business, which may be said to begin with the week before Easter. Preparatory to the great feast of the Church, the clergy and the sisterhoods swarm down upon the market in such numbers that the trade of the week before Easter is said of late years to have become the heaviest of the whole season. The flower trade, which has been up till that time in a condition of comparative torpor, starts at once into full activity, and from Easter right on through the summer it is at high pressure. And this pressure seems every year to be becoming greater. Among other causes is the very great improvement which has so generally transferred the dishes from the dinner-table to the sideboard, and substituted for them tasteful arrangements of fruit and flowers. In addition to this, the growing intelligence and improving taste of the people at large, the examples of floriculture exhibited in the parks, the multiplication of flower shows, and the publication of cheap serials and gardening guides, all combine to constitute one of the healthiest tendencies of our times, and one which there is every reason to believe is as yet quite in its early stages.

The preparations that are now being pushed on for the summer trade seem likely to be barely adequate to its requirements, and will certainly have to be extended very shortly. Hitherto there have been some 300 stands in the market; when the extension is complete there will be somewhere about 400, and we understand that the demand for space has been so great that already it is apparent that a still greater extension might safely have been ventured on. At the same time the general market is undergoing a considerable enlargement of its borders, houses being demolished as leases fall in or can be bought on reasonable terms. This opening-out of the market is likely to go on for the next few years, so that Covent Garden, instead of being swept away, as was the general expectation a few years ago, is really striking its roots deeper. Within one quadrangular plot, bounded by Southampton Street on the west, Tavistock Court on the east, Tavistock Row on the north, and Tavistock Street on the south, some forty or fifty houses have been or will be demolished before long. The whole of this ground will be thrown into the market, though its definite disposal is not yet quite determined on. A great amount of property, too, is being pulled down on the southern side of the great square with the view of widening roadways and facilitating approach, and all this is being done and a great deal is contemplated in the expectation that an enlarged market will make this demolition of property a paying enterprise. As in the case of the Flower Market, several tendencies of the time seem to be conspiring to make this famous emporium of fruit, flowers, and vegetables more and more important, while thus far nothing in the shape of competition—such as exists to some extent at Farringdon Street and in the Borough—seems to have the slightest effect on it. A good deal is every now and then said about the unwholesome state of the market, notwithstanding that the scavenging alone costs £1300 a year. While, however, Covent Gardeners attracting every year more and more trade, and is busily preparing to receive a larger influx of laden waggons, it seems very doubtful whether the slightest improvement in this respect is at all practicable.—(*Daily News*.)



KITCHEN GARDEN.

THE soil for the reception of seeds should now be in good order, as sowing time will soon be here. Trenching and rough digging must be finished as soon as possible. Manure, wheeling and digging it in can also be pushed forward. All vacant space should be prepared for cropping. Where winter crops occupy the ground let those quarters remain for late crops if possible. When the soil under crops is in good order, the early preparation is not important, as it may be turned over the day before sowing or planting, and the crops will generally be found to do well. For instance, just now we have much ground under winter Spinach which we cannot dispense with yet, but by-and-by it will be dug, and Potatoes will be planted. Where kitchen gardens have been well worked much may be done in this way. We always find crops succeed in newly dug ground, as it is mellow and not beaten down by the weather. Collect all old refuse, wood ashes, sand, &c., and keep it under cover to place over the seeds. A quantity of soot may be mixed with it, and this will be found of much advantage to Carrots, Onions, and all plants liable to be destroyed by grubs.

Parsley.—A little of this should be sown for a first crop. Lime the ground first and sow thinly in drills 15 inches apart. A rich soil is necessary to produce fine growth. Old Parsley plants are now showing signs of failing, but will give a supply until the seedlings come in. Remove all decayed leaves, spread some old Mushroom manure about the plants as well as a sprinkling of soot, and fork this in. The plants will soon renew their growth and be very useful a few weeks hence.

Horseradish.—Where plantations of this have been in the same position for some years the roots will have decreased in size. Lift them all. Throw away the smallest, but select the strong pieces and dibble them into good fresh soil with a distance of 2 feet from row to row and 1 foot between the plants.

Cauliflower Plants.—Those wintered in frames and recently exposed to the weather may now be planted out. Give them very rich soil. Form trenches 6 inches deep, $2\frac{1}{2}$ feet apart, and place the plants in these about 18 inches apart. Lift them with good roots, and they will receive no check. Sow a pinch of seed in a sheltered spot of Veitch's Extra Early variety, Sutton's King and Autumn Giant.

Lettuce.—Plants wintered under protection should be put out. The base of a wall is a good position for early ones. In shifting them keep the roots from harm and give them good soil. Sow seed of Early Paris Market and Jefferies' Little Queen along with the Cauliflowers named above.

Second Early Peas.—Telegraph, Wordsley Wonder, Gladiator, Stratagem, and Paragon may be sown before February is over. Give them good soil and a warm situation, as they will come in at a time when Peas are in great demand. Draw earth up to the sides of those through the ground and stake them before they are far advanced, as this will afford them very acceptable shelter.

Spinach.—Seed may be sown between the rows of Peas and Raspberries, or in any sheltered position. Open the drills 2 inches deep and sow thinly, cover with the mixture spoken of above, and fine tender Spinach will be had in quantity before other spring vegetables are in.

Spring Cabbages.—These are now in very satisfactory condition and promise well. Earth up all the rows which have not had this attention. Place out more plants from the store bed where the supply is likely to be deficient, and sow a quantity of seed of the All Heart variety. Last year's plants, which gave a supply of heads, and were left in to produce sprouts, are now very useful. The young tops have folded in a little, and when boiled are tender and sweet. They should not be thrown away until others are in.

Autumn-sown Onions.—Where these are large and crowded in the seed rows thin them, and plant those taken up in good soil 6 inches apart in rows 1 foot asunder. A crop of Onions can never have too much attention in spring, as when the previous season's bulbs are over those now under notice are most valuable.

Turnips.—Seed of the Early Milan variety can be sown on a south border, but not extensively, as it is rather early to deal with this crop successfully. Early Turnips are so very useful that it is always worth while risking an early sowing at this time.

FRUIT FORCING.

Figs.—*Early Trees in Pots.*—The fruit will now be approaching the most critical stage, when any check given will be likely to cause the fruit to fall, hence great care must be exercised in the management of the roots. The roots having taken possession of the fresh compost advised to be given in a former calendar, it will be necessary to place rims of zinc or lead about 4 inches deep inside the pots to admit of fresh mulching being given and for holding water in sufficient quantity, also affording liberal supplies of liquid manure in a tepid state. Syringe twice a day when the weather is fine, taking care to wet every part of the wood and foliage,

otherwise red spider may appear after so much sharp firing, and prevention is always better than cure. On dull cold days a thorough damping of the walls and other available surfaces may be substituted for the afternoon syringing, as the foliage should be fairly dry before nightfall. Stop all the side shoots and thin useless spray where the trees have attained their full size, but allow the terminal shoots to extend if space will admit, without producing too much shade or overcrowding. Turn the fermenting materials, and add a few fresh leaves to maintain the heat at 75°; but in turning care must be taken not to injure the roots that have found their way into the fermenting material. Let the night temperature range from 55° to 65°, with an increase of 10° to 15° by day, giving a little air at 70°, and let 80° to 85° be the maximum from sun heat.

Succession House.—Trees established in borders started early in January will require disbudding and stopping—the side shoots at the fifth or sixth joint, the leading shoots being allowed to extend to the extremity of the trellis without stopping, as these invariably give fine highly flavoured fruits. These young shoots should not be tied in too closely, as Figs when growing in light favourable positions invariably set an abundance of second crop fruits on short-jointed wood. Keep the inside borders well mulched and watered, having the top-dressing constantly moist to encourage surface roots. Syringe twice a day in fine weather, damping available surfaces only in dull weather. Allow the night temperature to range from 55° to 60°, or a little more on mild nights, 70° to 75° by day from fire heat, and 80° to 85° after closing on bright afternoons.

Late Houses.—Complete the pruning and cleansing without delay. In the pruning of late houses, from which only one crop of Figs can be satisfactorily obtained, a little extra thinning will admit of an even spread of foliage without overcrowding or retarding the ripening of the fruit, and the young shoots will be firm, short-jointed, and under judicious treatment properly ripened before the close of the autumn.

PEACHES AND NECTARINES.—*Earliest House.*—Although the weather has been milder the temperature has to be kept up by artificial means, consequently the fruit is somewhat less advanced than usual. The trees, however, are looking well, the roots being established in inside borders, and the fruits will advance rapidly when favourable weather comes. In the meantime pursue a steady course, maintaining a night temperature of 55°, falling 5° on cold nights, 65° by day artificially, and 10° more from sun heat after closing, a little air being admitted from 65°. Disbud according to the growth; if strong and healthy the whole of the foreright shoots may be taken off at once, and many of the side shoots on the extensions pinched back to form spurs, especially where there is likely to be a scarcity of foliage, always bearing in mind that the last break from the base must be retained and have ample room for extension and full exposure to light. Trees that have started weakly from past overcrowding or indifferent root-action set freely, in which case no time should be lost in the removal of the least promising fruit from the lower side of the branches or shoots where the thinning of the blossom has been neglected, and to improve the condition of the trees syringe the paths and every available surface other than the trees with tepid clear liquid manure after the house is closed in the afternoon, which will soon impart colour and strength to the foliage. Syringe freely twice a day on fine days with water slightly warmer than the house, but avoid having the foliage wet at night. It is advisable to give a little air at 60°, gradually increasing it as the temperature rises, but guarding carefully against draughts or sudden depressions of temperature. Examine inside borders, and water freely when necessary with tepid water until it passes through the drainage, which should be perfect, as the Peach delights in abundance of water provided it be not stagnant.

Succession Houses.—Follow the usual routine, fumigating thoroughly before the first flowers open, and draw the hand down the lower side of the shoots where the blossoms are too thick. Water inside borders thoroughly if at all dry, and cease syringing when the blossoms expand. Maintain, however, a moist condition of the atmosphere by damping the paths in the morning and afternoon. Fertilise the flowers every day after the pollen becomes ripe when the house is dry and warm.

Late Houses.—Well ventilate by day and night unless the weather is severe, and get the borders properly moistened before the buds swell, or many of them will drop. Any tying of the trees to the trellis or other work in arrears should be forwarded and brought to a close as soon as possible. If dressing has to be done be careful not to disturb the buds.

PLANT HOUSES.

Eucharis amazonica.—Plants that have flowered and will not be required to flower again for some time may now be repotted. It is a good plan to repot these plants annually, not all together, but in batches. The whole of the old soil should be carefully removed from amongst the roots and the plants repotted in fresh, care being taken that the compost used for them has been well warmed for some days previous to use in the house in which the plants are growing. In potting the small bulbs should be stripped off, and if it is necessary to increase the stock these should be potted by themselves. The pots must be liberally drained; for instance, a pot 12 inches in diameter should be nearly half filled with drainage, and others, whether large or small, in the same proportion, for the Eucharis is not a deep-rooting plant. The soil should be pressed firmly into the pots and the bulbs just covered with soil. If the soil used is sufficiently moist when the plants are potted no water will be needed before root-action has commenced vigorously. The pots must be plunged into cocoa-nut fibre refuse. If the surface of the pots are covered it is surprising how quickly the plants form roots, especially if a slight

bottom heat can be given. If this precaution is adopted to prevent evaporation from the soil the plants establish themselves in half the time they will do when stood upon the surface and water applied occasionally. After the plants have been plunged they should be syringed lightly twice daily. A good compost for these plants is fibry loam, one-seventh of manure, a little charcoal, and sufficient coarse sand to keep the whole porous.

Gardenias.—Young stock rooted three or four months ago and thoroughly established in 3 and 4-inch pots should now be transferred into others 2 inches larger. For winter and spring flowering young plants raised annually are preferable to old stock. Old plants become woody and somewhat stunted, and are therefore more liable to be attacked by insects than young vigorous plants. These if potted at once and grown without a check will by autumn be bushy specimens from 18 inches to 2 feet in diameter. In potting the soil should be pressed in firmly to insure a sturdy compact growth, and the plants may be placed in a light position as near the glass as possible. These plants should be watered carefully for a time after potting, and syringed overhead once or twice daily during favourable weather. Those that have no young plants to pot should strike a batch of cuttings at once, for suitable shoots are now plentiful on plants developing their flower buds. Insert the cuttings singly in small pots in sandy soil, for every one will root if kept in a close frame, and are not checked afterwards by potting. When inserted together, however carefully the cuttings are potted, it is impossible to do it without injury to the roots. From cuttings rooted now plants can be produced before autumn that will carry twenty or thirty flowers each. A suitable compost is good loam, one-third leaf mould, one-seventh of manure, and coarse sand. They will do well in a mixture of loam and peat, or can be grown very satisfactorily in the former, which is always employed here for the last shift the plants receive.

Clerodendron Balfourianum.—Another plant or plants should be started to succeed those that have now fairly commenced growth. The plants may be placed in a temperature of 60° to 65°, and syringed two or three times daily until they commence growth, when they should be repotted and trained the same as advised a few weeks ago. If the plants started first have growths upon them 3 inches in length, a number should be taken and inserted in sandy soil in a 5-inch pot. These will soon form roots in a close frame or under a bellglass, and should be transferred into 6 and 7-inch pots for early flowering another season, as well as for flowering in the conservatory later in the year. This is one of the best plants for forcing that can be grown, and plants in the size pots named are very beautiful when trained round four or five stakes and profusely flowered.

Clerodendron fallax.—This is a very fine scarlet-flowered species, and is equally as useful in the conservatory as in the stove during the summer months when in full beauty. Those that practise the raising of seedlings will not retain old plants, for the former do so much better and give less trouble. A little seed should be sown at intervals of about a month, and will soon germinate in heat covered with a square of glass. Those that do not possess seed may repot old plants that have been resting, and start them the same as advised for *C. Balfourianum*.

THE BEE-KEEPER.

THE BRITISH HONEY COMPANY.

"A. B. M. (page 119) says I should have ascertained the facts before I had made the statements I did on page 99. Let me inform him that I took the trouble to learn the truth, and always intend to do so before I make a statement. Next time he writes I trust he will give proofs for his assertions. If he and all others will do this I shall have great pleasure in answering them.

Your correspondent asks if I know that during the Health Exhibition honey in large quantities was always on sale at the B.B.K.A. department, and that the sales for weeks exceeded £20? I have read a report in the *British Bee Journal* to this effect. But let me ask him whose honey was it that was sold? Was it not sent there by a gentleman, who was buying sections at 9d. per lb., and making what profit he could from it? I would much like an explanation from others if "A. B. M." cannot answer this. There is a statement in the "Bee-keepers' Record," page 154, October 15th, 1884, from a correspondent to the effect that he asked this rev. gentleman to let him have a few tons of this (130 tons he spoke of) that he could buy at 9d. per lb., but then he wanted 1s. 2d. Say the expenses were 1d. per lb. this would leave him £4853; nice profit this for a clergyman to be making in a philanthropic way, and no wonder others should have an eye to the same laudable objects; and to use "A. B. M.'s" own meaning, those who invest their money in the hope of earning a dividend will endeavour that it shall be as large as possible, and woe to the poor bee-keepers.

"A. B. M." talks of the weekly takings at the International Health Exhibition being from £20 to nearly £30. If he will refer to the *British Bee Journal* for Nov. 15th, page 390, he will see that the takings for everything—hives, honey, books, appliances, &c.—were £500 for the whole time the Exhibition was open. Let him divide it by the due number of weeks, deduct the probable amount of the other things, and look at the result; then contrast this with 5000 lbs. of honey sold in one day, realising upwards of £300 at such a small out-of-the-way place as Grantham in 1883, and very nearly this quantity was sold in 1884 in one

day again. "A. B. M." speaks of the B.B.K.A. organising fairs. Will he give particulars of them? I know of none, save and except the honey counter at the shows, on which a charge is made. People usually go to shows to look and not to buy, while the Lincolnshire fair is free to members.

The Baroness Burdett Coutts offered a portion of the Columbia Market for the purpose, but it was never accepted—why, I should like to know. A scheme which has been tried yearly since 1876 without a single failure is surely worth more consideration than any untried one.

As Dr. Walker touches some of the points mentioned by "A. B. M." I will pass on to him. I see he acknowledges that the Honey Company have taken the fullest powers. He says, in fact, the powers of the Company were to be as general as a certain curse, nothing was to be left out, so that the shareholders might be "pounded to the better." This is what I am contending for; that this Company is to be a money-making one. Then he makes a statement to the effect that whatever honey they sell to the public they will guarantee its purity; nor will they sell foreign honey as English. I will show how it is out of the power of Dr. Walker or his co-promoters to undertake to do anything of the kind; neither can they prevent 10 per cent. of foreign honey and 10 per cent. of starch glucose from being sent out labelled, "Finest prepared honey put up by the British Honey Company, Limited," with their trade mark attached. Let me ask Dr. Walker how many of the British public would take a label with this on to mean anything else but that it was pure British honey; or if they sent out foreign honey labelled, "Pure foreign honey put up, &c.," what is there to prevent dealers from sticking a fancy label on the word "foreign" and making the label imply that it was British? Nothing whatever the Honey Company might do can prevent this.

Another point: The Company have taken powers to set up bee-keeping abroad, and to contract with foreign honey-producers. Does Dr. Walker, or any other promoter, wish us to believe that when they have set up bee-keeping, or contracted with a foreign producer to take his produce, they will buy all the British honey there is for sale and keep their own out of the market? Why have they not kept to the words of its Chairman on page 354, *British Bee Journal*, Oct. 15th, 1884? "We plainly see that pure British honey will soon drive these mixtures out of the markets. Once show the public of what they consist, and they will never touch them again," yet they have taken powers to supply these very "mixtures" in a more attractive dress. The proposal was to deal in pure British honey only, and educate the public to appreciate it. The trade can now get all the foreign honey they require without the aid of any British honey companies.

Now about the standard sections. Both Dr. Walker and "A. B. M." refer me to look at the last number of the *British Bee Journal*, published three days after my letter on page 99. The quickness with which they have grasped at this "straw" is very suspicious, but as I do not intend to be uncharitable, I will make no remarks. Have these two correspondents referred to page 412, vol. xii., *British Bee Journal*, quoted by me on page 99? If they will do so, they will find that it is the whole Committee of the B.B.K.A. (not a sub-committee) which so decided, on the recommendation of the Exhibition sub-Committee; and if they will turn to page 410, under heading, "Important to Manufacturers and Exhibitors," they will see an editorial to the same effect. This decision was that only honey in sections $4\frac{1}{4}$ square, and $6\frac{1}{4}$ by $5\frac{1}{4}$, should be allowed to compete at the Association's shows, thus not only adopting these sizes as the standards, but enforcing them in a manner they have never once tried to do with their frame; in fact no one thinks of showing hives with the defined Association frame if he expects to get a prize. If they will refer to the *British Bee Journal* for January 15th and February 1st, they will find seven correspondents who evidently believe the Committee have adopted these sizes as the standards. I quote from one on page 49, "And as the Honey Company intend dealing in British honey exclusively, that of itself will be a sufficient guarantee," &c., and at the foot of this the Editor replies; I will copy the whole, as this is the first intimation given in that journal, and bear in mind it was printed two days after the publication of my letter on page 99 of this Journal. "The B.B.K.A. has not yet adopted any size of section, nor can it do so until the Association holds its annual general meeting, nor has the British Honey Company in any way pledged itself to deal exclusively in British honey; on the contrary, it has taken the fullest liberty of action." Dr. Walker says if the Committee do not represent the true wishes of bee-keepers at large, whatever they propose against these wishes will fail in their effect; but let me inform him that neither the Committee, nor even the B.B.K.A., represents bee-keepers, nor one-tenth of them.—A HALLAMSHIRE BEE-KEEPER.

THE NATIONAL BRITISH BEE-KEEPERS' UNION.

The promoters of this scheme invite the severest criticism of it. They are most anxious to make it perfect, so that the free opinions of either friends or foes will be received with thanks.

Those bee-keepers who wish to join the promoters should address the Secretary—Mr. John Hewitt, Cambridge Street, Sheffield; but all remarks for or against should be sent to this Journal, so that all may consider what they have to say and form their own judgments.—A HALLAMSHIRE BEE-KEEPER.

PROPOSED ARTICLES OF CONSTITUTION.

1st, The name of this Society is the National British Bee-keepers Union.

2nd, It shall consist only of *bona fide* owners and keepers of bees residing in some part of the British Isles.

3rd, The objects for which it is established are—

- a, To promote the mutual interest and protection of its members.
- b, To obtain the best market price for its members' produce.
- c, To provide a common registered label and trade mark for the sole use of its members on the honey produced by them.
- d, To provide against and prevent any member mixing his produce with any foreign substance, or putting the labels of the Union on any honey, imitations, or mixtures not gathered by his or her own bees.
- e, To organise fairs or other kinds of markets at convenient centres for the sale of members' produce.
- f, To do all such other things as may seem necessary for the benefit or protection of its members.
- g, To promote, assist, or do anything which is calculated to improve the art of apiculture.
- h, To make or provide (if thought advisable) honey bottles, sections, crates, or any other appliance not being bee hives or parts thereof, that may be necessary to enable its members to put their produce on the market in merchantable shape.
- i, To grant licences, authority, or power to others, not being the producers, to bottle any member's honey and affix the Union's labels thereon, and sell the same on commission or otherwise, or to appoint an officer if found necessary to do the same.

4th, The annual subscription to members shall be 2s. 6d. per annum, due 1st of January in each year, and payable within the month, and 1s. entrance fee. All members who have not paid their annual subscriptions on the first day of February in each year, or applied for an extension of time, shall be suspended from all rights or benefits of the Union until such subscription is paid.

5th, Each applicant for membership shall be a keeper and owner of bees, and shall conform to all the rules and regulations of the Union, and shall not mix other honey with or adulterate his or her honey with any foreign substance, or in any way palm off other honey as the produce of his or her bees.

6th, Each application shall be attested by one or two references to the effect that the applicant is a keeper and owner of bees; that he or she is an honest and respectable person, and in their opinion will not be guilty of fraud in any way whatever.

7th, That in case any member shall cease to keep and own bees for the period of one year, he or she shall be suspended until such bee-keeping is resumed; and should any member be guilty of fraud or fraudulent practices in any form, he or she shall be expelled from the Union, and shall never be eligible again for re-election.

8th, The Union shall comprise an Executive Council, Districts, and Local Lodges. The Council shall consist of all the District Presidents, who shall be elected in the annual assembly at Easter by all the members belonging to their respective districts.

9th, The districts shall be formed by dividing the British Isles into twenty-one parts (see schedule). The whole members of such respective districts shall assemble yearly at or before Easter, in some town or place within the district, and elect a President, Vice-President, Secretary, and five Committee members, which shall be the District Executive, three to form a quorum, to assist the Council in managing the affairs of the district. At this assembly all members belonging to the district may vote, either by person or proxy, or join in any discussion, and any other member of the Union may be present and speak, but without the right to vote. The President of the district shall be a member of Council, and should his seat become vacant it shall be filled by the Vice-President.

10th, All members in each respective district may meet quarterly for election to vacant offices and other business, reading of papers, discussing of subjects, passing votes of censure, approval, or otherwise on the Council, or recommending any subject for their consideration, and any other resolution thought advisable.

11th, The Council shall elect a President, Vice-President, Treasurer, and Secretary, from amongst their number, and may appoint any person to any post or service of the Union that may be found necessary.

12th, The Council shall meet at least once every three months, five to form a quorum, for the transaction of business, and all its decrees or resolutions, &c., shall be unquestionable by any member, lodge, or district, and can only be revoked by itself or a fresh elected Council.

13th, The Council shall provide, at a price to be determined by them, a common registered label, and all other printed matter for the common use of the members of the Union.

14th, All rules, regulations, and amendment of constitution of this Union, or alteration thereof, shall be made by the Council, and all cases or question of dispute decided by them shall be final.

15th, Any four or more members in any locality may form themselves into a Local Lodge, three to form a quorum, which shall manage their local affairs, assist the District Committee in organising honey fairs, &c. Any Lodge within four miles of a district boundary may choose which of the two districts they shall form a part, and any member may please himself whether he joins a Lodge or not, and if he does, the Lodge he or she will join.

16th, Every Lodge shall meet at least once each month, appoint a Secretary, who shall bring before the Lodge any communication from the district or head Secretaries, which shall discuss the question relating thereto, and pass any resolutions thought necessary, which copy of said resolutions shall be immediately forwarded to the respective Secretary.

17th, The Lodges shall transact any local business, reading of papers, discussing of apicultural topics, or questions of advice to which answers are required by those able to answer; to make arrangements for clubbing in taking bees to the moors or other pasture ground, or shelter or convenience, &c., thereat, arrangement of subjects, &c., to be brought under the notice of the quarterly or annual assembly of the district, and do anything calculated to be of benefit to the Lodge, and not to the hurt or injury of the rest of the members of the Union, or contrary to the rules and constitution.

18th, Each Lodge shall determine the amount of contribution payable to its funds by its respective members.

19th, All members of the Union shall be eligible for any office, and all officers or representatives shall retire yearly, and be eligible for re-election.

20th, All rules, resolutions, or other vote either of Lodge or district, except election of officers or representatives, shall be subject to the confirmation of the Council. The election of all new members, after being approved or not by the District Committee or Lodges, shall also be confirmed by the Council.

21st, All entrance fees, annual subscriptions, revenue from tables, or other source, shall belong to and be handed over to the Council, except Lodge or district contributions, or any funds that may be subscribed for local purposes, in which case that body, whether Lodge or district, to which it belongs, shall have the charge or management of it or any property purchased with the same.

22nd, All members shall affix all or any label of the Union in the manner required on all honey sold, exposed, or offered for sale to any dealer, and at any fair or other market, except only such honey which may be sold or given direct to a consumer or agent of a consumer.

23rd, All Council members shall be paid their travelling expenses while attending to the business of the Union out of the general funds, but other expenses or remuneration if any shall be paid by the district they represent, to be voted by the district annual assembly. Nothing in these articles shall prevent the district annual assemblies from voting a remuneration or payment to any other officer or representative.

24th, As soon as organised this Union shall be registered, enrolled, or incorporated under the Friendly Societies or other Acts of Parliament.

SCHEDULE REFERRED TO (ENGLAND).

District.	District.
No. 1.—Cumberland, Westmoreland, Northumberland, Durham, North Riding of Yorkshire, Lancashire (north of Morecombe Bay), and Isle of Man.	No. 6.—Oxfordshire, Northampton, Huntingdonshire, Buckinghamshire, and Bedfordshire.
No. 2.—Lancashire, East and West Ridings of Yorkshire.	No. 7.—Cambridge, Norfolk, and Suffolk.
No. 3.—Cheshire, Shropshire, Staffordshire, and Derbyshire.	No. 8.—Essex, Hertfordshire, and Middlesex.
No. 4.—Lincolnshire, Nottinghamshire, Leicester, and Rutland.	No. 9.—Kent, Sussex, and Surrey.
No. 5.—Herefordshire, Worcester, Warwick, and Gloucester.	No. 10.—Berkshire, Wiltshire, and Hampshire.
	No. 11.—Somerset and Dorset.
	No. 12.—Devon and Cornwall.

WALES.

No. 13.—Cardigan, Radnor, Brecknock, Monmouth, Glamorgan, Carmarthen, and Pembroke.	No. 14.—Montgomery, Merioneth, Carnarvon, Anglesea, Denbigh, and Flint.
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SCOTLAND.

No. 15.—Aberdeen, Banff, Elgin, Nairn, and all islands and counties north thereof.	No. 18.—Dumfries, Kirkcudbright, Wigtown, and Ayr, south of River Doon.
No. 16.—Argyle, Perth, Forfar, Kincardine, Fife, Stirling, Dumbarton, and Kinross.	No. 19.—Lanark, Ayr (north of Doon), Renfrew, and Bute.
No. 17.—Haddington, Berwick, Roxburgh, Selkirk, Peebles, Linlithgow, and Edinburgh.	

IRELAND.

No. 20.—The railway from Dublin via Athlone to Galway shall divide the Island into two parts, making North Ireland and
No. 21.—South Ireland.

THE BRITISH BEE-KEEPERS' ASSOCIATION.

I do not know whether "A Lanarkshire Bee-keeper" wishes for information, but I am quite sure that he stands sorely in need of it. His ignorance of the matters on which he writes is most palpable. May I inform him, then, that the *British Bee Journal*, of which I am the proprietor and editor, is entirely independent both of the British Bee-keepers' Association and of the British Honey Company, which are also perfectly independent of each other? If the Association were dissolved, and the Honey Company were to come to nothing, the *Bee Journal* would hold on its course without interruption so long as I have any control over it. The *Bee Journal* has no trade interests whatever. The idea of a conspiracy between the B.B.K.A., the British Honey Company and the *Bee Journal* to introduce American honey into England by means of a standard section is so utterly absurd as to need no refutation. Far from endeavouring to "force" a standard section on bee-keepers in general, the Committee of the B.B.K.A. only took the matter in hand in accordance with the expressed wish of a great number of bee-keepers. I am not likely to ask for a vote of confidence from "A Lanarkshire Bee-keeper" or his friends, but I am not conscious of having done anything to deserve any loss of the faith or the confidence of British bee-keepers generally. I was not the originator of the Honey Company, as "A Lanarkshire Bee-keeper" asserts; nor was I, when the idea was first broached, at all sanguine as to its success. I accepted the post of chairman of the Board, not from any self-interested motives, nor from any expectation of its being a profitable speculation, but with the view of aiding a movement which I thought would be for the benefit of the British bee-keeper, though it seems to have proved a thorn in the flesh to the "Lanarkshire Bee-keeper."—HERBERT R. PEEL.

BEFORE "A Lanarkshire Bee-keeper" again assails the British Bee-keepers' Association I strongly advise him to acquire accuracy of thought as well as accuracy of expression. In your issue of February 5th I drew attention to the fact that "During the Health Exhibition honey in large quantities was always on sale at the department established there at great cost by the British Bee-keepers' Association." In the remarks made by "A Lanarkshire Bee-keeper" he says that "A. B. M." "tells us of the £20 and £30 worth being sold at the Health Exhibition brought there at great cost by the British Bee-keepers' Association." I told your readers nothing of the kind. My assertion was that the department was esta-

blished at great cost, not that the honey was brought there at great cost. He then inquires, "Is this so? It is not a fact that a penny in the shilling as poundage is charged by the Association for all honey sold?" No doubt such a charge is made, and rightly. Bee departments and honey fairs cannot be established without some expense. Bills must be printed, salesmen must be engaged, tents must be pitched, or rooms must be hired. In some places the erection of staging is a very expensive item. All these things cost money, so that the poundage is readily paid by most exhibitors. The sales of goods and honey at the International Health Exhibition in the bee department amounted to more than £430 yet the "poundage" did not nearly meet the cost incurred by the British Bee-keepers' Association.

"A Lanarkshire Bee-keeper" inquires whether there is or is not a close connection between the Honey Company and the British Bee-keepers' Association. I know as much of the latter as "A Lanarkshire Bee-keeper," probably a good deal more, and I beg to inform him that there is no connection whatever between the two. It may be true that some members of the Association, from philanthropic motives (the names of Messrs. Cowan and Peel are a sufficient guarantee on this point) have assisted in the formation of the Company; yet it is equally true that there is no connection whatever between the two. If "A Lanarkshire Bee-keeper" discredits this statement let him give some clear and definite proof to the contrary, or else let him hold his peace.

The following sentence affords one more illustration of the delicious muddle "A Lanarkshire Bee-keeper" has made in rushing to the rescue of his unfortunate friend who hails from Hallamshire:—"The members of the British Bee-keepers' Association have said so much against foreign honey being so much inferior to the British honey, that the only reason I can see for them dealing in it is that their own interests are of more importance to them than are the interests of the bee-keepers of the United Kingdom." Is it a fact that the members of the B.B.K.A. "have said so much against foreign honey being so much inferior to the British honey?" Some members of the Association may have objected to foreign honey because often it is adulterated and impure; but curiously enough they are charged with "speaking against foreign honey being so much inferior to British honey." "The only reason," continues the "Lanarkshire Bee-keeper," "that I can see for their dealing in it is that their own interests are of more importance to them than are the interests of the bee-keepers of the United Kingdom." But the members of the B.B.K.A. as such do not deal in foreign honey. The Association has nothing whatever to do with buying, selling, or seeking foreign honey. "A Lanarkshire Bee-keeper" has no right to make such a statement either by implication or otherwise, and I challenge him to prove a charge which he has attempted to fasten so unjustly upon the B.B.K.A.

I can find neither time nor patience to answer at any length what "A Lanarkshire Bee-keeper" has written about the "boycotting" of hive-makers who would not comply to the standards of the B.B.K.A. The Association, in compliance with requests from all quarters, adopted a standard frame for the bar-frame hive, to the complete satisfaction of bee-keepers throughout the length and breadth of the land. For the present it has declined to recommend any special standard for sections, nor does it seem probable that any section standard will be adopted. The inuendo that the *British Bee Journal* is not entirely "free from trade interests" is quite in keeping with the other remarks of "A Lanarkshire Bee-keeper," and equally deserving of credit.

In certain remarks which "A Lanarkshire Bee-keeper" has deigned to make respecting the Rev. H. R. Peel he suggests that Mr. Peel, "instead of making a bed of Roses for himself of bee-keepers, may have raised a nest of hornets about his ears." Is, then, "A Lanarkshire Bee-keeper" one of these hornets? If so, his sting is very blunt, though his buzz is very loud.—A. B. M.

[We have received a letter from "Pro Bono Publico," but as the major part of it is practically identical with what has been said by Mr. Peel and "A. B. M.," it is only necessary to publish the concluding portion as follows—"The British Bee-keepers' Association did much more than sell honey at the Health Exhibition. It circulated a large quantity of pamphlets setting forth the advantages of honey as food, giving many useful recipes in which honey could be utilised, and distributed thousands of leaflets to the visitors cautioning them against the use of adulterated honey. The Association is a national institution, and endeavours to promote the national good, and to quote the words of a recent daily organ, 'deserves to be more widely appreciated.' Its Committee consists of honourable gentlemen who devote much time and money for the public good, not one of whom would take any step or promote any undertaking which would tend to injure the British bee-keeper." To this we may add that "A Hallamshire Bee-keeper," in a letter before us, states—"It must not be understood that I want to abolish the British Bee-keepers Association; on the contrary, I hope to improve this institution, and make it a power for good."]

TRADE CATALOGUES RECEIVED.

W. P. Laird & Sinclair, Dundee.—*Catalogue of Vegetable and Flower Seeds for 1885.*

E. G. Henderson & Sons, Maida Vale, London.—*Catalogue of Flower, Vegetable, and Agricultural Seeds.*

Wm. Rennie, Toronto, Ontario.—*Seed Catalogue for 1885.*

James Yates, 29, Little Underbank, Stockport.—*Vegetable and Flower Seeds for 1885.*

F. and A. Dickson & Sons, Chester.—*A Book of the Farm, 1885.*

William Paul & Sons, Crossflat Nursery, Paisley.—*List of Show and Fancy Pansies, Pinks, and Florists' Flowers.*



* * * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Books (Fruchis).—We are not aware that there are any books published on the subject you name.

Gum on Camellias (Borderer).—Will you kindly, and as soon as possible, inform us if there are any climbing plants on the roof of the house in which the Camellias are grown, or any other large plants in the house attacked by insects contiguous to the Camellias?

Amateur and Cottager (St. Boswells).—The term "amateur" does not bear the same meaning in all districts and under differing circumstances for the purpose of exhibiting, and we could have better answered your question if you had sent us an old schedule that would indicate the nature of your show. We can only say generally that a cottager is a person whose sole income is derived by manual toil, such as a working artisan, miner, or general labourer; and that an amateur is an individual of a higher social grade, and is not entirely dependent on weekly wages as a means of livelihood. It is the duty of the committees of shows to clearly express the distinction between the two classes of exhibitors, founded on the customs or peculiarities of the neighbourhood and the nature of the exhibitions. In the schedules of some large shows all who are not nurserymen are amateurs, but this definition will not do for the majority of local shows. In other cases an amateur is a person who employs a man occasionally to assist him, but does not keep a regular gardener. Thus the question is very much of a local one, and can only be decided by local circumstances.

Pruning Vines (F. J.).—You do not state the length of the rods, but at any rate you may shorten the weaker rods to within about 18 inches of the base of the rafters with the object of producing strong canes next year. The stronger canes may be left 4 or 5 feet long, and they each will support about 6 lbs. of Grapes. The pruning should be done without a day's delay, and the wounds dressed with painter's knotting to prevent bleeding. They ought to have been pruned before. If the buds at the lower part of the canes do not swell as freely as those above, bend down the canes to a horizontal position until the lower buds start and extend about half an inch, then with great care place the rods in their proper position. If this is done hurriedly and roughly some of the young growths are almost certain to be broken off, and a blank made that cannot afterwards be filled. There is no better time to clip Box edgings and Ivy than during the first mild showery weather in April.

Renovating Camellias (J. M.).—Camellias thrive admirably in some kinds of loam that contain little or no lime. In your case we should not have the loam too "light and sandy," but should prefer it of medium texture, adding silver sand and wood ashes to render it porous; a little bone-meal, say a pound to each 20 lbs. of loam, would be an advantage. It is not unlikely that a good portion of the old soil will need removal; it certainly will if it is sour, and in that case possibly some of the plants may not need larger pots. On this point, however, you must exercise your judgment, and also in the very important matter of watering. About the end of March will be a good time for repotting, and the temperature of the house will then be suitable for the plants. They will need syringing frequently and shading judiciously, maintaining a genial atmosphere at all times. Read Mr. Walker's excellent paper on Camellias on another page. It will perhaps convey information that will be useful to you in improving your plants; at the same time if you need further advice on any particular point you need not hesitate to write us again.

Late Black Grape (C. H. Contich).—There is no Grape in use now that colours better as a rule than the Black Alicante does. Well grown it is of imposing appearance and of fairly good quality. The Vine is also a good grower and free bearer. The Grape that realises the best price in London just now is the Gros Colman; but the noble berries must be well coloured, which is not always the case, and the other is more certain and easier to grow. Grapes to be in good condition now must be quite ripe in October, and not "ripening" now as you appear to think. The books will be sent, also a catalogue with a good frame hive marked in it; but many persons find large old-fashioned straw hives as good as any.

Culture of Lamb's Lettuce (D. P.).—The plant bearing the above name is known botanically as *Valerianella olitoria*, and is a native of Britain, being also known as Corn Salad, and in France as "Mâche." It is esteemed by many persons as a salad, and is cultivated for that purpose both here and on the Continent. It is raised from seed sown any time from February to October, but August and September are the chief months, as winter and early spring supplies are then obtained. The seeds are sown in drills 6 inches apart, and the plants can be thinned to that distance apart. They can be cut in the same manner as Spinach, and when well dressed as a salad it is usually much liked. We appreciate your compliments, and thank you heartily for your good wishes.

Early Tulips (S. Merchant).—The earliest Tulips are the Duc Van Thol varieties, which may easily be had in flower at Christmas; for following them Vermillon Brilliant, Chrysolora, Cottage Maid, Proserpine, Pottebakker, and Keyser's Kroon, with many other single varieties, are suitable; also the double Tournesol and Rex Rubrorum. If you edge your bed with blue Lobelias, then plant consecutive lines of the Pelargoniums Mrs

Pollock, Happy Thought, Crystal Palace Gem, Vesuvius, and Christine, with, if you prefer, Madame Vaucher in the centre, it will look very well.

Notice to Quit (Ten-years Reader).—In all cases of this kind it is best to consult a solicitor; however, if there is no agreement to the contrary, it appears to us that you can demand a month's notice to quit. No doubt you must pay your rent to your new landlord if the purchase is completed. On this point you had better consult the individual from whom you took the premises.

Sponging Plants (Young Gardener).—The former letter to which you refer did not reach us. We very readily answer your question. Neither Gishurst compound nor softsoap solution, if used warm and the plants well syringed or sponged with clean water immediately, will leave any sediment; but if there are no insects, all you need do is to sponge the leaves with warm soft water. Soot water, as clear as sherry wine, applied with a sponge, is good for plants and distasteful to insects. An ounce of quassia chips soaked in a gallon of soft water for forty-eight hours makes a good insecticide; or if you boil the chips for twenty minutes the solution can be used as soon as it is cool enough. Perhaps the "nice glossy appearance of Crotons, &c.," you have seen at flower shows was in part the result of oiling the leaves—a pernicious practice that we advise you to avoid. We have seen plants disqualified, and rightly so, because their leaves had been smeared with oil to render them "glossy." A deep colour and naturally healthy gloss can be insured by good culture, which includes cleanliness.

Auriculas Dying (J. L.).—We are sorry to hear of your failure with these charming flowers. As you say there is no woolly aphis on the plants that are dead or dying the result must be due either to unsuitable soil or some error in management. You do not state what position they occupied in the summer. Are you sure there are no wireworms in the loam? You say you gave them "too little water if anything." Possibly as the summer was very hot that is the source of the evil, and perhaps there may have been insects on the under sides of the leaves that escaped your observation. In the absence of more precise information on details of treatment we are inclined to attribute the misfortune mainly to drought, heat, and insects during the summer months, while the soil, too, may have been too rich. You do not say whether the plants rooted freely into it or not, but we suspect they did not. Whatever may have led to their present condition we should at once turn them out of their pots, wash their roots, cutting off any decayed portion, and repot rather deeply in clean, small, well-drained pots in a compost of two-thirds of sweet turfy loam and the remaining third of leaf soil and bruised charcoal in equal parts, adding also a little silver sand. In potting place a little of the last three ingredients in immediate contact with the roots, then fill in with the general compost, pressing it down pretty firmly. If the roots just touch the sides of the pots when inserted the pots will be quite large enough, overpotting being an evil to be avoided in the culture of Auriculas. If the plants have scarcely any fibrous roots treat them very much as cuttings—that is, using sand freely, and insert them up to the leaves. The soil being in a proper state as to moisture and the roots damp, water will not be needed for a day or two, but when it is given let it be in sufficient quantity to pass quite through the mass, surface dribblings being dangerous, and we should not be surprised if that faulty system of watering has not something to do with your failure. Keep the plants rather close in a frame until fresh growth commences, then ventilate judiciously, slightly at first, then more freely as the leaves unfold, and protect them from frost. With great care in watering your plants ought to improve. The soil must never get really dry before water is given, nor should it be given before approaching dryness. It is, indeed, in the exercise of sound judgment in watering that success will mainly depend in restoring the plants.

Names of Fruits (J. O. W.).—We regret we cannot identify your Apple, which is probably a local variety. (*James Beadle*).—1, London Pippin; 2, Northern Greening; 3, Wyken Pippin; 4, Not known; 5, Beauty of Kent.

Names of Plants (A. B. C.).—The yellow flower is *Justicia calycotricha*. The other was too much withered to be recognised. (*D. P.*)—The plant is Lamb's Lettuce, *Valerianella olitoria*, for the culture of which see the reply above. (*F. G.*)—The double-spathed *Richardia* is very fine, and, as you will see, we have referred to it in another column. The Orchid flowers were quite unrecognisable in such a withered state. (*G. O.*)—1, To enable us to determine this plant you must send a specimen in flower carefully packed in a box; 2, *Abutilon vexillarium variegatum*; 3, *Saxifraga sarmentosa*.

COVENT GARDEN MARKET.—FEBRUARY 18TH.

Our market keeps very quiet, and prices generally remain as last week, but Grapes are steadily rising, supplies falling off considerably. Forced vegetables are short.

FRUIT.			
	s. d.	s. d.	
Apples	½ sieve	2 6 to 4 6	Oranges
Chestnuts	bushel	16 0 0	Peaches
Cobs, Kent	per 100 lbs.	55 0 0	Pears, kitchen
Currants, Red	½ sieve	0 0 0	" dessert
" Black	½ sieve	0 0 0	Pine Apples English
Figs	dozen	0 0 0	Plums
Grapes	lb.	3 0 6	Strawberries
Lemons	case	10 0 15	St. Michael Pines

VEGETABLES.			
	s. d.	s. d.	
Artichokes	dozen	2 0 to 4 0	Lettuce
Asparagus	bundle	7 0 8	Mushrooms
Beans, Kidney	100	2 0 2 6	Mustard and Cress punnet
Beet, Red	dozen	1 0 2 0	Onions
Broccoli	dozen	0 9 1 0	Parsley
Brussels Sprouts	½ sieve	2 6 3 0	Parsnips
Cabbage	dozen	0 0 1 0	Potatoes
Capsicums	100	1 6 2 0	" Kidney
Carrots	bunch	0 3 0 4	Rhubarb
Cauliflowers	dozen	3 0 3 0	Salsafy
Celery	bundle	1 6 2 0	Scorzoneria
Coleworts	dcz. bunches	2 0 4 0	Seakale
Cucumbers	each	0 6 1 0	Shallots
Endive	dozen	1 0 2 0	Spinach
Herbs	bunch	0 2 0 0	Tomatoes
Leeks	bunch	0 3 0 4	Turnips



SEED TIME.

ONCE more has the time come for a definite arrangement of the farm crops for the year, and we have carefully to consider ways and means for turning the land to best—dare we venture to say profitable?—account. Yes, the home farmer at any rate may still do so, for he has a ready means of disposal for his choicest productions; and as to the surplus, well, he must turn it to account in the best possible manner, and in this it must be acknowledged that he is put into competition with the tenant farmer. One thing is certain, that for a first-class article there will always be a ready sale at the highest market prices; be it our care to see that what we have to dispose of is as good as it is possible to be, and also that it is something likely to command a ready sale. We must be careful to avoid extremes, there must be due balance about our arrangements, and we must have regard to soil, climate, situation.

One of the things concerning which there are likely to be mistakes made is laying down land to permanent pasture—we mean it may easily be carried too far. We are bound to insist upon the production of the whole of our cattle food by the land if a farm is to pay its way. There must be no more heavy account for cake and corn, or for grinding; we must both grow the food and prepare it ourselves. Steam power is all very well, but when there must be horses kept upon the farm let there be horse gear for driving machinery, with a roof to cover it, and let wet days in summer and the days and weeks of winter, when horses must be kept off the land, be turned to full account by men and horses. If it be granted, as we think it must, that in this lies true economy, then remember that a due proportion of the land must be kept under the plough to provide enough corn, roots, and green crops to feed the live stock. For instance, we have now a splendid crop of Rye quite ready for folding, and which will soon be ready to mow for stall-feeding. That crop may fairly be considered invaluable; we have no substitute for it. Without it we must either feed off winter Oats or wait for Rye Grass, Trifolium, or winter Tares; and so useful is the Rye that we never have quite enough of it. The dairy cows must have a regular supply of it to impart colour and flavour to the butter, and if some can be spared for forward lambs they have it, but generally they are taken to the earliest piece of Rye Grass.

Of corn crops enough Wheat is grown, at the rate of about 40 bushels per acre to supply the household flour, and straw for the stable and for thatching. The quantity of straw required for the carriage and saddle-horse stables leads to more Wheat being grown than is required for flour, but the surplus is turned to excellent account either whole or ground for chickens and cattle. Winter Oats look exceptionally well, and we have to sow enough spring Oats to insure a full supply of Oats for all the horses upon the estate, also for cattle and sheep, as well as for grinding for oatmeal; the straw is used chiefly for feeding lean stock in winter, but no animals live entirely upon it; then it is either chaffed and mixed with other food, or hay is given once a day. Good land will produce from 50 to 60 bushels of Oats per acre, so that our calculation of the number of acres to be sown is easy. Then comes Barley, yielding 30 to 40 bushels per acre, as a supply of whole corn for poultry and meal for fattening pigs. Of Peas and Beans we get about 40 bushels per acre, also for meal, and some whole Peas for pigs. A certain margin must be allowed in all these crops for the effects of bad weather, for it would obviously be unwise not to allow a moderate surplus for an emergency.

Root crops comprise Mangolds, of which an ordinary crop yields 20 to 30 tons per acre. This is decidedly a profitable crop taken at its lowest value of 15s. per ton, for under high culture it is so much heavier that we have heard it remarked that the crop of Mangolds was worth more than the land upon which it grew. Be sure and have plenty of it both for the dairy cows and ewes after lambing. The crop of Carrots, Parsnips, and Swedes may be put at a common average of 20 tons per acre. Red Intermediate is our favourite Carrot, alike useful for horses and cows; cattle are also very fond of Parsnips, and Swedes are very useful where many sheep are kept. Enough Potatoes are grown for home consumption and for pigs upon ordinary home farms.

Upon farms within a short distance of a good market large breadths of Potatoes of early or second early sorts may be grown and sold at a considerable profit, and with a degree of certainty that is in pleasing contrast to the risk of loss from disease attending the culture of late Potatoes. Early Potatoes are also soon off the land, in time for another crop, which is generally white Turnips, of which a full and heavy crop may be had, for second early Potatoes are usually ready for market by the middle of July. We have seen a crop of medium-sized Turnips obtained by clearing off the Pot to haulm, then sowing the Turnip seed broadcast and passing harrows over it; but to obtain a full crop the land must be ploughed and thoroughly broken up before the seed is sown.

(To be continued.)

WORK ON THE HOME FARM.

Horse and Hand Labour.—The frequent recurrence of wet days has induced us to revert to an old but good plan in Pea sowing, which is to push on the ploughing on every favourable occasion and to sow at once, so that a certain breadth of land is ploughed and sown before we leave the field. We thus avoid all trampling upon the soil again till the surface is rendered firm and dry by March winds and bright sunshine. Not only for Peas, but for all spring corn is the plan advisable in a wet spring, when to wait for fine settled weather involves the risk of being too late with the sowing to insure a full crop. The sowing of artificial manure upon grass land for hay now follows promptly after the withdrawal of the sheep from each meadow. It is our practice to give the teg sheep a last run through the hay meadows this month, and then to have no more grazing upon them till after the haying. This plan insures an early strong growth and full crop of grass, to which the early application of the manure contributes. To keep the sheep upon the grass till the end of March makes a late, often a light, hay crop, and to defer sowing the manure till the end of March or beginning of April involves a risk of the manure remaining upon the surface undissolved till it is too late for the hay crop to derive any benefit from it. In pastures where Clovers are apparently failing a dressing of wood ashes should be given. The effect is generally almost magical, for pasture where hardly a plant of Clover was previously visible to the casual observer will present a strong free growth of Clover standing up conspicuously among the grass, and contributing greatly to improve the quality of the hay. Chemists tell us that wood ashes contain in some degree all the most essential elements of plant food except ammonia, potash being the most abundant.

Poultry.—The early broods of chickens have come strong in numbers, and most of the birds are thriving. This is important, for in households requiring a steady supply of from one to two dozen chickens weekly the supply is liable to fail at that critical time between the late autumn and early spring broods, and it is then precisely that the demand for them increases. Game, turkeys, and geese are at an end for the season, therefore more chickens are called for and must be had. Everything must be done that is possible for the early broods. Feeding must be done early in the morning, frequently during the day, and as late as possible in the evening. Our most successful poultryman is an enthusiast, and he goes the round of his broods at 8 P.M., placing his lamp upon the feeding board in front of each coop as he comes to it. This attracts the chickens, and they at once run out and feed eagerly. We may be told that such late feeding is unnecessary. Our man thinks not, for he says the nights are long and the chicks become weak from fasting so many hours, and are then liable to suffer from cold and damp, which prove fatal to so many early broods. But his best answer is the fact of his success in rearing large broods with hardly a loss.

NOTICES OF BOOKS.

A Revolution in Farming, Ensilage, and Cultivation of Maize in England. Jarrold & Sons, Norwich; and 3, Paternoster Buildings, London. Price 6s.

WE have here, in a pamphlet of forty-two pages, a clear and simple explanation in a popular form of the making of silos, the process of ensilage, and also the cultivation of Maize in this country as a result of much importance rendered possible by the introduction of silos; most of which is a reprint from the *Pall Mall Gazette*. It gives a description of the Merton silos, with particulars of the cost of building them, the manner and cost of storing the silage or pit fodder, the importance of the exclusion of air, and a simple and economical way of doing so; and it tells how the silo renders us independent of the weather. Some valuable facts are given in proof of the great value of Maize for silage, and only for silage. "To feed the stock with the chopped Maize in its raw state would either kill or injure every beast that tried to digest the woody stalk of the Maize; but in the silo the first process of digestion is gone through. The woody fibre softens, but the leaves and stalks retain much of their natural appearance." In the wet cold summer of 1883 Mr. Woods of Merton grew twenty-eight tons of green Maize per acre, and last year, after a drought which lasted fourteen weeks, the same field yielded more than thirty tons. The first thought one has after reading of such extraordinary results is how terribly exhaustive to the soil such crops must be; yet it is apparently not so, for Mr. Woods explains that "The land was manured for Maize with fifteen loads of farmyard manure, and three hundredweight of superphosphate per acre," which is anything but an extraordinary

quantity. The pamphlet abounds with good sense and sound practical hints from beginning to end, and we cordially commend it to the notice of every farmer.

THE PRICE OF ARTIFICIAL MANURES.

A QUOTATION of prices for artificial manures received from our manure merchants since the publication of the article (page 142) upon this important subject, shows a reduction upon last year's prices of £1 per ton for nitrate of soda and £4 10s. per ton for nitrate of potash. The entire quotation is as follows:—

	£	s.	d.	
Steamed bone flour	9	0	0	per ton.
Mineral superphosphate 25 per cent. ..	5	0	0	"
Nitrate of soda	10	5	0	"
Nitrate of potash	17	0	0	"
Ground coprolite	4	0	0	"

Delivered alongside rail or wharf in London for nett cash, which shows that the quantity of manure given last week can be had on rail in London at the very low rate of 23s. 2½d. per acre for grass land, 30s. 4½d. per acre for grain crops, and 50s. 4½d. per acre for roots. It must not be forgotten that these are ton rates; if only a few hundredweights were required the rates would be somewhat higher. Again we say to tenant farmers, Combine and make up one large order, and so avoid the rapacious middleman, and, what is even more important, obtain pure manures.

FARMERS' YEAR BOOKS.—Two of these are before us, and both of them as may be expected, are excellent productions, and of interest to agriculturists. The first to hand was Messrs. Suttons' of Reading, which is copiously illustrated, and contains an excellent portrait of Mr. M. H. Sutton, who is just entering on his seventieth year. Amongst other things the interesting fact is recorded that Mr. Sutton was requested by the late Prince Consort thirty years ago to send a complete collection of Grasses to Osborne for the gardens of the Royal children. Mr. Sutton's excellent article, "How I Judge Seeds," is included in the work. Rather smaller, but very neat and substantial, is the "book" of Messrs. F. & A. Dicksons of Chester, also freely illustrated and containing tabulated selections of seeds and other hints of service to cultivators. The table showing the quantity of seeds to be sown per acre will be useful to inexperienced cultivators for reference.

OUR LETTER BOX.

Fowls Ailing (West Herts).—We fear there is something very wrong in your system of feeding and management. Let us know—1, How you house and feed your birds? 2, Do you supply grit for digestion and lime rubbish or oyster shells for shell-forming? 3, Is there any running from the nostrils or cankerous formation in the throat of the bird you first refer to as "having a rattling in his throat?" We can then advise you with some precision.

Silos and Ensilage (J. E.).—Silos are simply receptacles for storing herbage in a green state, which is termed ensilage. On page 102, our issue of January 29th this year, you will find an article on the subject; another on page 158, August 14th, 1884, and three others, forming a series, on pages 268, 289, 309, March and April 1883. A manual by Mr. James Thorold Rogers, M.P. (Swan, Sonnenschein & Co., Paternoster Row); and another just issued by Messrs. Jarrold & Sons, London and Norwich, also afford much information on this subject.

Abortion in Sheep (S. P.).—If the animals have not been frightened or over-driven at some time, we can only attribute their condition to excessive feeding on Turnips, which has been known to produce inflammation and abortion. You cannot do better than ask a practical farmer or competent shepherd to examine them and determine the treatment that the condition of the animals suggests. That is undoubtedly the safest course to pursue in this peculiar and apparently very serious case.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain	
	Baromet- er at 32s and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1885.											
February.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
Sunday	8	29.803	46.4	45.9	S.	40.6	51.5	40.2	57.2	32.9	0.163
Monday	9	29.651	38.1	35.0	S.W.	41.8	46.8	36.8	70.4	31.8	—
Tuesday	10	30.013	37.8	37.0	S.W.	40.4	48.4	33.4	60.2	26.2	0.010
Wednesday ..	11	29.995	50.4	48.7	S.W.	40.8	55.7	37.1	68.4	37.1	—
Thursday	12	30.154	48.4	47.8	S.W.	42.2	57.8	41.3	75.3	32.6	0.010
Friday	13	30.062	47.3	46.3	S.W.	43.4	53.3	45.2	52.8	45.0	—
Saturday	14	29.784	48.9	46.6	S.W.	43.8	50.7	46.6	53.2	40.9	0.118
		29.923	45.2	43.9		41.9	52.0	40.1	62.5	35.2	0.301

REMARKS.

8th.—Dull morning, drizzle in afternoon, wet and windy evening.
 9th.—Lovely spring day.
 10th.—Foggy morning and colder, fair day, damp evening.
 11th.—Damp early, fine bright day.
 12th.—Dull and rather damp.
 13th.—Dull.
 14th.—Overcast, with sprinkles of rain during day, and steady rain at night.
 Dull, damp and warmer even than the previous weeks. The mean temperature is about that usual in the middle of April.—G. J. SYMONS.



COMING EVENTS

26	TH	Royal Society at 4.30 P.M.
27	F	Quekett Club at 8 P.M.
28	S	Royal Botanic Society at 3.45 P.M.
1	SUN	2ND SUNDAY IN LENT.
2	M	
3	TU	
4	W	Society of Arts at 8 P.M.

THE PHILOSOPHY OF PRUNING.



THE art of pruning fruit trees has, perhaps, received more attention from writers on practical gardening than almost any other horticultural subject since the days of Abercrombie, Hitt, or Speechley, down to the present time. These old writers often gave very accurate and full directions for pruning the different kinds; and although there is in their writing much to avoid, there is, notwithstanding, a great deal that is

useful and may be studied with advantage by those who have time to peruse them. Harrison in 1825 not only gave excellent and minute instructions on this subject, but he also gave such valuable hints on making and preparing fruit tree borders as to put to the blush many authors of modern date.

In the present generation there are three authors who stand out very conspicuously as eminent teachers of this very difficult art—viz., Lindley, Rivers, and M. Du Breuil. By each of these authors we have the various methods of pruning explained on such sound physiological and scientific principles as the older writers could not possibly lay claim to. Each of them, especially the former, assisted to raise the art of pruning from the partial obscurity in which it was previously enveloped and placed it in a clearer, more accurate, and more attractive light. Those operations which had been formerly taught and executed by finger-and-thumb rule, they reduced to sound theoretical principles, so that the hands should not merely be guided by the mind, but so that a clear and definite reason could be given for the necessity of every operation. To them, therefore, we are largely indebted for the great improvements which have recently been made in the different methods of fruit cultivation. Lindley was, perhaps, the greater teacher in a theoretical sense, but to the other two, and especially to Du Breuil as regards our own country, belongs the credit of putting those theories into useful and successful practice. To the French author, as well as to Mr. William Wardle, the author of the English version of his work, we owe a special debt of gratitude for the elaborate and excellent lessons it contains, and also to Mr. Thomas Rivers for his plain and graphic descriptions of his successful practice, all of which have done so much to increase and extend fruit culture in this country.

Winter pruning, as suited to the different kinds of fruit trees, is now generally so well understood that there is little necessity to refer to it specially here, only, perhaps, to remark that much injury is often committed by the inexperienced, especially in pruning young exuberant trees, by annually heading them hard back with the intention of causing them to produce a fuller, better furnished, and more even-shaped framework, or base upon which to build the future tree. The unnecessary and injurious practice is a remaining relic of old times, something similar to that pernicious practice which existed a few years ago in the medical profession of using the lance for the cure of nearly every ill to which the human body is heir. This barbarous annual practice of severe amputation produces no good effect on any

fruit tree, and to some kinds, especially so to stone fruit, it is particularly injurious, especially when the soil in which they grow is naturally rich, and where the young main branches have a tendency to grossness. In such instances this practice invariably produces gumming and canker, so changing and checking the natural current of the sap as to produce even in young trees such a plethoric condition as to engender disease even while the trees are in a young state.

If in following this system the time in filling the trellises or walls alone be taken into consideration the loss is great, but if the different crops of fruit which would otherwise have been forthcoming be also estimated, the loss will be even greater still. Instead of this annual mutilation, all that is required is to secure from the maiden tree five, or at most seven, main or leading branches, and instead of pruning these off or heading them back, allow them to remain their entire ripened length, depending afterwards for a sufficient number of well-placed young shoots for filling up the framework of the fruit tree to timely and judicious summer pruning. In old and previously neglected fruit trees there is sometimes great necessity for careful and judicious thinning of the branches, so as to admit light and air to every part of the trees, but even in such cases it is neither prudent nor beneficial to have recourse to that thoughtless and severe lopping which is sometimes practised even by experienced cultivators.

I remember once having seen a large and valuable orchard half ruined by the reckless manner in which the proprietor set to work to improve, as he called it, the condition of his trees. They consisted of good varieties, but they had been so much neglected previously, and the branches had become so thick, that the fruit, although plentiful, was exceedingly small and inferior in quality. Instead of gradually trying to effect an improvement by thinning a few of the smallest branches and young shoots each year, so as to cause no perceptible check to the trees, large branches were mercilessly sawn off, and the younger shoots severely thinned, with the result that some of the larger trees never recovered from the shock, the branches became diseased and gradually died, while it took years to restore the rest to health and fertility.

This was, no doubt, an exceptional case, but similar ones unfortunately are still too frequent, and if not of common occurrence in the larger orchards, I fear we cannot say the same of those geometrically trained trees which generally occupy the quarters and borders of the kitchen garden. In pruning these, in order to keep them within reasonable limits, we annually resort to severe and injurious methods that often result in canker and decay, and which, although they may tend to produce neat handsomely grown shapes, are not, as a rule, calculated to promote either health or fertility. By this I do not mean to argue that these prettily trained trees are always incompatible with good results, but such is frequently the case, unless this wholesale winter pruning is either wholly or partially obviated by supplementing a more rational and less severe method of treatment, such as the authorities I have already quoted have advocated so forcibly.

I have stated that severe winter pruning is often the cause of much injury instead of being productive of health and fertility, not that I feel inclined to endorse unreservedly the statement sometimes made that the pruning knife ought in future to be confined to its sheath. At the same time, I firmly believe if it were less frequently and less freely used, good rather than evil would be the result. Moderate and judicious thinning in winter is, no doubt, sometimes necessary, but if careful and timely attention be paid to summer pruning it will seldom be required to any extent in the winter season. It is true, in regard to summer pruning, that to be successful it is essential that it should be performed at the proper time, even to a day, and very frequently it must be performed at a time when work generally presses heavily

on every hand, whereas winter pruning may be performed at any time between the fall of the leaf and the time when the buds again start into growth, without any special harm being done, with few exceptions, although the sooner the operation can be performed in the autumn the better. It is also a season when other work does not press so heavily, and no doubt this is a great inducement to many to neglect summer pruning entirely, but it cannot be reasonably used as an argument against summer pruning if the latter can be proved to be more conducive to health and fertility.

Summer pruning undoubtedly requires throughout the early summer months unwearied and strict attention to minute details, otherwise it is not productive of good results. It is also essential that the operator should first make himself thoroughly acquainted with the nature and condition of each tree, as well as to have a definite object in view before he attempts summer-pruning. He should, in fact, be able beforehand to see exactly the effect that will be produced by the operations he is about to perform, and regulate his method of treatment so as to suit the varying conditions of each tree. Like every other system of pruning it has been carried to excess by its most enthusiastic advocates; its more general adoption has also been somewhat retarded by the disrepute which has, in some instances, attended it by misapplication and the erroneous practice of novices. These instances are fortunately not sufficiently numerous nor of sufficient importance to prevent its progress, and that it will be generally adopted in future in the cultivation of the smaller forms of fruit trees and such as are trained on the walls, for all of which it is well suited, there cannot be a doubt. In the cultivation of stone fruits summer pinching and pruning is more especially advantageous, and were it solely adopted in their management the pruning knife might be altogether discarded; gumming, canker, and similar plethoric diseases, too often engendered by inordinate winter pruning, would be greatly reduced, and the trees generally would be more healthy and fruitful. Apricots especially are so benefited by summer pruning, that in numerous instances I have seen half-furnished, ill-shaped, miserable-looking trees completely renovated in a very short time by its adoption.

It is sometimes erroneously supposed that summer pruning can only be practised with success when the roots are greatly restricted either by periodical root-pruning or by confining them to a limited border, also that free-growing exuberant trees are irreparably injured when subjected to this method of treatment. This is doubtless sometimes the case, but only when improperly performed. To allow numerous shoots to form and grow till they have reached, perhaps, 6 inches in length, and then, as is sometimes done, suddenly remove two-thirds of them at the same time, is not such pruning as can possibly prove successful. The tree under such circumstances receives such a shock as will prove injurious. As soon as the buds begin swelling the operator must be in almost daily attendance, first to rub off the ill-placed and surplus buds, and afterwards to remove and suppress by an extremely gradual process the young shoots as they require it. Perhaps the greatest evils in summer pruning accrue from the practice I have here alluded to, and no pains or exertions should be spared to rectify this erroneous practice.

Another and almost as great an evil is frequently committed, especially by those who are desirous of having compact and elegantly shaped trees by pinching or pruning to excess. It is no uncommon occurrence even now to see an amateur—I should not like to say a gardener—set to work on a tree, and with the utmost zeal pinch every lateral as well as every terminal shoot, under the impression that he is following either Rivers or Du Breuil. Following them he certainly is, but in much the same sense that the country sign-painter is after the old masters, whose choice productions he sometimes pretends to imitate. This is the chief reason why young gross-growing trees are damaged by

summer pruning, and the chief cause of its having been to some extent condemned. To be successful a free passage must be left in every main branch for the uninterrupted flow of the sap. If the lateral branches are all suppressed—and this should never be done at one time—the terminals must be left intact; and should either of these become too vigorous that should be pinched, while the laterals upon it, as well as the other terminal shoots, can be left unpinched till the proper balance of strength is secured. Sometimes it is necessary to remove a portion of the foliage to secure this end, but this practice should if possible be avoided, as it seldom answers the purpose, but frequently prevents the formation of buds at their base.

In cultivating Apricots and Peaches on this method I have never found any advantage to accrue from the practice which some are said to have followed successfully—viz., of allowing numerous foreright spurs to remain on each branch. I never found the flowers on these set so freely, nor will the fruit swell so large as that on the young branches which are trained in close to the wall. The spurs also after a few years become stunted and unsightly; but in retaining only the side shoots they are easily managed, and by always preserving the bud at the base of each lateral for the succeeding year's shoots the trees can be kept perfectly furnished with young wood from the top to the base without any difficulty, and without the least necessity for the use of the knife at any season. There is one great advantage gained by this method of treating Apricots and Peaches which must not be overlooked—the young shoots not only grow more evenly over every part of the tree, but as there are no gross shoots, and the sap is more regularly distributed, the wood ripens earlier and perfectly. So well, in fact, does it ripen, that there is no necessity for shortening the shoot in winter to remove unripened wood, as it ripens to the tip of each branch, and thus the wall or trellis can be covered in half the time usually required when the pernicious system of severe winter pruning is followed. It is sometimes argued that unless this annual shortening of the branches is practised the dormant buds at the base of each shoot will not break, that a succession of well-placed young shoots cannot be secured, and that the trees quickly become naked and unsightly at the bottom; but this is simply a bugbear that quickly vanishes before careful, judicious, and timely summer pruning, which is not only a more easy and pleasant method of treatment, but it is also more natural and decidedly the more profitable.—VITISATOR.

TRENCHING GARDEN SOIL.

MR. IGGULDEN did good service in bringing the above subject before your readers. I thought, when reading his first article upon the waste of time in deep cultivation, that for weeks our Journal would be filled with the valuable experience of able correspondents. As the old saying goes, "every lit le will help," so I will give a little of my experience, and I am prompted to do so by Mr. Temple's excellent article on page 104, when he mentions a new garden in which I was employed in the west of England twenty-seven years ago. The site was chosen partly because it was a convenient distance from the house, and partly because there was a small old garden there before; but apart from these advantages the site was most objectionable, as it was with an extraordinary cost of labour that it was brought into anything like uniformity. A great part of the garden had to be raised 6 or 7 feet, and in other parts sandstone rock had to be excavated to the depth of 10 feet. Many of your readers will doubtless say, What has all this to do with trenching? which I will now try to describe.

In the low ground before mentioned a trench was opened 2 feet wide to utilise the stone and get it out of the way. About 12 inches of this stone was thrown loosely into the bottom of the trench. As the work proceeded a stiff marly clay was brought from the frame ground and other places where soil was not needed. This was mixed with the surface soil of the plot of ground and raised to the necessary height, trenches being partly filled with stone until the whole ground was finished and prepared for a crop. I might say that here I had considerable practice with pickaxe and wheelbarrow, both of which I have since found useful, and when the "chief" was cut of the way we young fellows with more strength than discretion used to vie with each other who could wheel the heaviest load of stone and laugh well

at the one who trembled most under his load. This, perhaps, was better than, as we say in Ireland, to be "schaming." Now for the result, which is, I think, the best proof of the utility of trenching. In due time the first crop that was planted in this trenched soil was Brussels Sprouts without the least manure; these reached the height of from 3 to 4 feet, well studded from bottom to top with fine firm sprouts. Such a remarkable growth I have not seen since, and proved, I think, in a marked manner the utility of deep soil. Doubtless the roots travelled to the full depth of the soil and spread in all directions, and these roots decaying would form a certain amount of food for future crops.

Some time after Raspberry canes were planted upon the same ground, and such monster canes and heavy crops of fruit would almost astonish even Mr. Iggulden. In another part of the same plot Peas were grown to a great height with very heavy crops. The varieties I do not now remember, but they were staked with straight Hazel rods with fine side sprigs. The pods of Peas hanging between the stakes formed a very pretty sight from the ends of the long lines. Other vegetable crops were grown equally as successful with comparatively little manure. For some years after leaving the above-mentioned garden I was employed in others, but chiefly under glass, so had but little experience in the kitchen gardens.

About seventeen years ago I took charge of the gardens here, my first and only head place. One day the housekeeper came into the garden and said, "We never have Peas after July or August. They are always covered with mildew." This is a very old garden, the soil quite black with vegetable matter, and when I took charge of it the soil was about 12 inches deep, overlying poor hard marly soil. With the experience of my boyish days, and the tall Brussels Sprouts in mind, I commenced by deepening the soil a little every winter as time would afford, a trench being opened at one end of a piece of ground. A little of the surface soil with any other vegetable matter, such as leaves that had been used for hotbeds the previous year, was thrown into the trench, the hard bottom being well broken up and mixed with the black soil; when too hard for a strong steel fork the pickaxe was used. We were not at all so particular as many of your correspondents in bringing several inches of this soil to the surface, for when well mixed with the old vegetable soil it gave it new life and was in a position to be made better. Winter after winter we trenched and retrenched part of the garden until most of our soil is as good 3 feet down as upon the surface. The result was, Peas generally free from mildew and bearing until destroyed by frost; Ne Plus Ultra, still the best Pea I think, bearing crops until the blossom is destroyed by frost. Scarlet Runners, of which we never sow but one crop, bear well until November. All the Brassicas do equally well, especially Brussels Sprouts and Cauliflowers. Potatoes, which are generally considered surface-rooting, delight in a deep well-drained soil. I have taken up from a single set of the Champion 18 lbs of good Potatoes. In 1883 single sets of the Reading Hero produced 15 lbs. of sound Potatoes, which were exhibited in our local seed shop windows, and the smallest produce of any set in the whole plot would be over 10 lbs. The roots of Potatoes I have found over 3 feet down.

Many object to deep loosening of the soil because the roots go down out of the reach of sun heat, but I think the secret of good fresh succulent vegetables, especially the Brassicas, is in having well-drained deeply worked cool soil. Who has not seen Cauliflowers in August with their leaves drooping in shallow soil and their roots longing to get out of the reach of the sun's rays and to where they could obtain moisture to lift their drooping heads?

Mr. Iggulden speaks of bonemeal and other manures applied liberally near the surface, but unfortunately we are not all blessed with employers with such long and well-filled purses as Mr. Iggulden, and have to resort to deep cultivation as a substitute for copious dressings of manure. I do not know a kitchen garden crop that is not benefited by deep cultivation of the soil. The roots of kernel and stone fruit trees should doubtless be kept as near the surface as possible, as the sun heat is of the greatest advantage to these if sufficient moisture is retained in the surface soil.—W. O., *Fota Island, Cork.*

KIDNEY POTATOES.

THESE are very numerous, but many of them are inferior. It would be interesting to have the pedigree and history of all the Potatoes now offered to us. Could anyone name a better kidney Potato for very early culture than Myatt's Ashleaf? I do not think they could. When true it is dwarf in growth, very prolific, as early as any other, and of the finest quality. This is one of the few kidney Potatoes we find it profitable to grow. Gloucester Kidney is another which follows it with the same character. It resists the disease, crops heavily, and is of capital quality. Covent Garden Perfection is our third kidney, and it is an excellent one, being compact in growth, very prolific, perfect in quality, and not liable to disease. Another kidney, and my list is closed. This is Snowdrop, a new one sent out by many firms in 1884, but I had it two years before that from a friend in its own county—Northamptonshire, and after

three years' trial I can speak of it in the highest terms. It combines two qualities not often found in Potatoes—viz., it is good for table and exhibition. It is very hardy, grows robustly, bears a large crop of beautiful white tubers, and they are of the finest table quality. It is affected by disease so little that it might almost be said to be disease-resisting, and as a main crop kidney it has no equal. For exhibition and table it should be grown everywhere. The raiser of this grand Potato, whoever he be, deserves the thanks of every Potato eater, and all who grow it cannot fail to appreciate his work.—A KITCHEN GARDENER.

THE LITCHI.

THIS famed fruit is now so frequently seen in Covent Garden Market and the leading London fruiterers' shops, that it is familiar to many persons. We have, however, several inquiries respecting it, and in reply to them submit the following figure and particulars:—The Litchi is esteemed one of the finest fruits of the East, is the produce of *Nephelium Litchi*. The tree is a native of China and the East Indies, and was



Fig. 29.—*Nephelium Litchi*.

introduced to this country by the celebrated Warren Hastings. The fruit is the size of a Date, and grows in loose spikes. They are covered with a scaly hardish rind, which is red on one side and green on the other, containing a delicious white, sweet, subacid pulp, and a large somewhat obovate brownish seed. The Chinese preserve the fruit during winter by drying it in the same way as Prunes, and they use it in their tea, to which it communicates its fine subacid flavour, which is preferred to the sweetness of sugar. In the dried state they have of late years been imported to this country, and although they are necessarily inferior to the fresh fruit, still they preserve much richness of flavour. The Litchi is cultivated extensively in the southern provinces of China and the northern provinces of Cochin China, as it is impatient of either too much heat or too much cold, and the fruit is produced in the greatest perfection in the provinces of Fo-ki-en, Quan-tong, and Quan-si. Supplies of the fruit are packed in tin cases with spirits and honey, and transported to Peking for the Emperor's use, and even the trees themselves are conveyed thither; being sent off when in flower, the fruit is generally ripe on arrival at Peking. When eaten to excess the Litchi is said to create an eruption over the whole body.

VINERIES.

I AM not aware of having said anything on this subject to justify Mr. Molyneux's remark (p. 149) of "his failing to see that my plans are

the only proper ones to arrange all the details therein." The arrangement of external and internal details of vineries as recommended by me at pp. 24 and 26 certainly do answer my purpose, and, so far as the fixing of the hot-water pipes goes at any rate, that of a great many more besides, though, as Mr. Molyneux remarks and shows, it may not "please everybody." I have not the slightest objection to anything I write being criticised or to being called upon to defend any expressed views. Mr. Molyneux says, "What I said about arranging the pipes (sleeper-wise) was with the idea of advising persons to guard against the attacks of 'red spider.'" It is out of consideration for this troublesome insect that he objects to hot-water pipes being fixed as recommended by me and practised by most of the leading horticultural builders with the consent of the gardeners in charge. His reasoning on this subject I am afraid is calculated to lead the inexperienced fruit-grower to the erroneous conclusion that it is the manner in which the hot-water pipes are fixed in vineries, and not the growing therein of Strawberries or French Beans, together with the management or mismanagement, which causes red spider to attack the foliage. It would also appear that in order to prevent the ravages of this pest it is only necessary to distribute the pipes in the manner he describes. He very rightly "considers prevention in most cases to be better than cure." Though unmindful of this admission and of his commendable dread of the attacks of red spider, and also by way of justifying his expressed preference for a cement pathway in vineries, he recommends that shelves on which to grow Strawberries and French Beans be suspended from the hip roof, concluding that this, together with the training of climbing plants—perhaps affected with mealy bug—up the back wall would serve a better purpose than furnishing the same with Vines.

In reference to the use of liquid manure in evaporating troughs of the pipes to prevent the spread, if not the attack, of red spider, and at the same time benefiting the Vines, as explained at p. 113, I need scarcely say that there is no mystery about its application from the time the Vines start into growth until the Grapes commence colouring, except while the Grapes are in flower, when the ammonia arising therefrom might have an injurious effect. Though Mr. Molyneux seems to doubt the efficacy of liquid manure thus employed, he makes use of it as a weapon of defence by saying that a greater number of troughs could be used on the pipes under the system advocated by himself, and that the ammonia arising from the liquid manure would be more equalised over the house in consequence. True, but according to his own showing there should be no occasion for using this red spider antidote, as the system which he advocates would appear to be an all-sufficient remedy against the attack of red spider. But I should think this supposition is more imaginary than real.—H. W. WARD.

CHRYSANTHEMUM GOSSIP FROM FRANCE.

In an article under the above heading which appeared in the *Journal of Horticulture* of the 12th inst. reference was made by me to the International ballot in favour of the Chrysanthemum instituted by the Horticultural Society of Chalons.

The ballot was duly carried through, and, having just received the monthly official report of the Society, I find the result of the ballot set out in it. It will be remembered that voters were to select the names of what they considered to be the best fifty varieties, and the following is a list of those Chrysanthemums elected in the order in which the votes were given:—

Triomphe de la Rue des Châlets
Erectum Superbum
Gloire Rayonnante
Source d'Or
Laciniatum
Fair Maid of Guernsey
M. Planchenau
Bras Rouge
M. Frémy
Mme. Clémence Audiguier
Yellow Dragon
La Charmeuse
La Frisure
Souvenir de la Reine Mercédés
La Vierge
Pink Perfection
L'Automne
Sœur Mélanie
Marguerite Marrouch
Perle des Beautés
Fée Rageuse
Père Délaux
L'Île des Plaisirs
Timbale d'Argent
Belle Paule
William Bull

Royal Soleil
Perle des Blanches
M. Moussillac
Maréchal Soult
M. Roux
Richard Larios
Alexandre Dufour
Fabian de Médiana
M. Crousse
L'Infante d'Espagne
Dr. Audiguier
Flamme de Punch
Aimé Ferrière
L'Incomparable
Reine Margot
M. Delaux
M. Castex
Empress of India
Patrie
Mlle. Cabrol
Lady Selbo ne
M. Elie
Dr. Masters
M. Astorg
M. Patrolin

I do not propose to make any observation on the above list except that the Committee have given us a list of fifty-one varieties instead of fifty; but this no doubt is a printer's error, considering that "they order these things better in France."

Before concluding I might do worse than draw attention of English cataloguers to the careful manner in which the names have been spelled, there being (so far as I am aware) in the original French list before me only three trifling orthographical errors, which are corrected in the above list.—A LAMBETH AMATEUR.

FRENCH ELECTION OF CHRYSANTHEMUMS.—Having been asked by the Secretary of our National Chrysanthemum Society to fill up a voting paper for the election of Chrysanthemums at Chalon-sur-Saône, France, under the auspices of the Horticultural Society of that town, I did my best to give a fairly representative list of fifty of the best Chrysanthemums as grown in this country. In the absence of any instructions to guide one in making a choice of varieties, the request being simply to name the fifty best Chrysanthemums, I selected twenty-five Incurved and twenty-five Japanese, making the selection principally from our standard exhibition varieties, but including a few popular sorts, as Mrs. George Rundle, Elaine, Golden George Glenny, &c., which would perhaps not be entitled to quite such a high position in a list of strictly exhibition varieties. The result of this election or plebiscite will, I think, rather astonish some of our Chrysanthemum exhibitors. The following are the names given in by myself:—

INCURVED.

Alfred Salter
Barbara
Empress of India
Golden Empress of India
Golden George Glenny
Hero of Stoke Newington
Jardin des Plantes
Jeanne d'Arc
John Salter
Lady Hardinge
Lord Alcester
Lord Wolseley
Mr. Bunn
Mrs. George Rundle
Mrs. W. Shipman
Mrs. Heale
Nil Desperandum
Prince Alfred
Prince of Wales
Princess of Teck
Princess Beatrice
Princess of Wales
Queen of England
Refulgence
White Venus

JAPANESE.

Album Plenum
Balmoreau
Baronne de Prailly
Boule d'Or
Comte de Germiny
Comtesse de Beauregarde
Criterion
Elaine
Fair Maid of Guernsey
Fanny Bouchardat
Flamme de Punch
Japonais
Jeanne Délaux
Madame C. Audiguier
Madlle. Lacroix
Marguerite Marrouch
Meg Merrilees
M. Ardene
M. Astorg
M. Burnet
M. Tarin
Mrs. Mahood
Soleil Levant
Thunberg
Triumph de la Rue des Châlets

The number of voters is not given. There would have been probably 30 or 40, out of which possible number we find Madame C. Audiguier gets 17 votes, Flamme de Punch 11, and Marguerite Marrouch 14, whereas Gloire Rayonnante gets 22, Laciniatum 20, Bras Rouge and M. Frémy 18 each. What does Mr. Molyneux say to this opinion of M. C. Audiguier? Then looking at Incurved varieties we find only eight mentioned at all, Souvenir de la Reine Mercédés heading the list with 15 votes, our Empress of India gaining only 9. Of the fifty varieties voted by myself, only eight have the honour of being mentioned at all.

After the reports received of the grand Chrysanthemum Show held at Chalon-sur-Saône last autumn we should have looked for better results, especially from the neighbourhood where so many of our fine varieties have been raised.—N. DAVIS, *Camberwell*.

[Mr. Davis also sends an election list similar to that given by "A Lambeth Amateur," except that the number of votes is given in each case, varying from 25 for the first to 9 for the last. It will be observed that the election was for "the best" Chrysanthemums, no distinction being made between Incurved and Japanese, and the results appear of little value to English cultivators.]

FORCING HYBRID PERPETUAL ROSES IN POTS.

ROSES are always highly appreciated, and perhaps in a greater degree when forced into bloom during the winter and spring months than at any other period of the year. Rose culture in pots has extended with great rapidity during the past few years, and perhaps there never was a period in the annals of horticulture when so many persons were engaged in producing Rose blooms early in the season as at the present time. This needs no proof, but the fact cannot be overlooked that many attempt forcing Roses and fail, partially destroying their plants, and this more from an insufficiency of knowledge than for the want of accommodation.

No attempt should be made to force a Hybrid Perpetual or any other Rose that is not thoroughly established in its pot, for all attempts to obtain success under these conditions will prove futile. Many pot plants in autumn or winter and force them into bloom the following spring, which not only proves disappointing, but is the cause of large numbers of plants being ruined annually. Plants potted in autumn, even if done early, are not in a fit state for forcing; the growth will be weak, and the flowers, if any are produced, will be small and worthless. This is not all, for the health of the plants will be destroyed, necessitating potting another batch of plants for the following season to meet the same fate, unless a sacrifice is made for one season until the plants are thoroughly established in their pots. To grow Roses well in pots and to give the plants a fair chance, they should be potted in early autumn and grown through

the following summer as I recommended a short time ago, when they will be ready for forcing the following season with some certainty of success.

Another and a general cause of failure is the fact that Roses are forced in too warm and too confined an atmosphere. Strong heat is ruinous to the Rose, and a higher night temperature than 50° or 55° should never be attempted during any stage of growth. During the day a rise of 5° or 10° by sun heat will be ample. The young tender foliage must be protected from cold draughts, and sooner than allow cutting winds to strike upon the plants the temperature may be allowed to rise considerably higher, for this will prove the least disastrous of the two and may be practised occasionally without the slightest injury. I do not know any plant that is sooner started into growth than the Rose. When the plants are well established and the wood ripe they very quickly commence activity, even in a cool house, if kept close and the plants syringed once or twice daily when the weather is favourable.

When the plants are first started they should not be introduced into a higher night temperature than 45° , with a rise of 5° by day, until their growth buds are bursting. The night temperature should be gradually increased 5° by the time the young shoots are about 2 inches in length, with a higher day temperature in mild weather when the flower buds are visible and developing rapidly. Directly these plants have commenced growth they must be given a light position and be kept as near to the glass as possible to insure dwarf, firm, and sturdy shoots. Where low houses or pits are available a bed of leaves can be made and the plants placed upon them. The less fire heat used the better, but the gentle moist heat thrown off by the leaves is very beneficial. After the plants have well advanced in growth the pots may with advantage be plunged in the leaves, and the gentle heat derived from them will stimulate the roots, increasing their vigour. A little air must be admitted daily whenever the weather is favourable, for only by this means can sturdy growth, bold and well-developed foliage, be ensured. This must not only be practised in the early stages of growth, but until the plants flower. In order to have well-coloured fragrant flowers, the plants should be removed to a cool structure before the buds develop. Not only are the flowers richer and finer when opened under cool treatment, but they last much longer.

To insure a regular head of bloom some attention is needed during the season of growth, for unless the shoots are trained into position while they are young it is impossible to do it afterwards. When the flower buds have developed to a good size and the wood is firm, it is very liable to break when the shoots are twisted into position, but when soft and growing they can be trained into any position by means of a portion of matting and a small stake. The shoots can be tied into position as they extend in growth, and the foliage then assumes a natural appearance. Training the shoots while green and soft has other advantages than those of arranging the flowers evenly, for the lower wood buds plump freely towards the base of the shoots and frequently break into growth while the plant is in flower or directly afterwards, and thus materially increases the size and formation of the plant. If strong shoots issue from the base during the operation of forcing, and they do not show signs of flowering, they should be trained as they grow in a similar manner to those that have flower buds at their extremity. When they have extended a good length and gained some degree of firmness, they should be well cut back—removing, say, 6 or 8 inches from the growing end. By this means four or six shoots have been produced from one strong one, which before the end of the season have become sufficiently ripe to produce flowers the following season. A little attention in this respect assists wonderfully in increasing the size of the plants and prevents a vigorous growth drawing support from the weaker portion of the plant, which would certainly be the case if allowed to grow undisturbed.—WILLIAM BARDNEY.

(To be continued.)

LIFTING OR ROOT-PRUNING VINES.

WHEN is the best time for these operations as regards Vines that had the crop of Grapes hanging up to first week in January? If they were Black Hamburgh Grapes and the crop cut, say, in September I should not hesitate to lift or root-prune the Vines at once if the foliage is at all green. In the case of Vines with Grapes hanging without foliage I firmly believe the first, second, or third week in March to be very suitable, so that the roots may not decay in the soil. My experience of lifting Vines is, that no matter how carefully it is done, roots will be damaged, and even where they are cut they will die. I lifted some Black Hamburgh Vines the first week in March, 1884, which had been planted four years, and the Vines have certainly improved. The following week I treated some

Muscats the same, and I was satisfied with the results. On examination of the roots I find invariably where they are either cut, broken, or damaged they are dead for a distance, but at the live portion they have formed two or three new roots; in some cases the newly formed roots run a foot or more long. Supposing I had done the lifting at any earlier period would they have succeeded as well? Until I have evidence to the contrary I shall believe that the later in spring this work is done the better, provided it be before there is any sign of the buds swelling.

I have some Gros Colman I wish to lift and replant in a smaller border, and purpose doing this the first week in March, then the house will be closed and gently heated as soon as the buds generally show signs of starting, and I intend cropping as usual. This is a subject that is well worth discussion, so I hope to glean something from others' experience. To lift and replant Vines in borders less than half the original width and crop them the same season without injuring the Vines, but, on the contrary, improving them, is not bad. True the Vines were only young (four years planted), yet I did expect a little check in the growing season, as I cut a good portion of the roots away, and then in lifting some were lost.

GROS MAROC GRAPE.—Mr. McIndoe is very sweeping in his remarks as to the keeping qualities of this Grape, and I am the more surprised at this, as I should have thought it would have kept well with him being late ripened, judging from what I have seen of his Grapes when exhibited in September. I believe there is no Grape that will carry the crop, finish well, and hang till Christmas like this variety. This was once considered rather late; now to keep pace with the times it must be February or March. It is the easiest grown large-berried black Grape I have, and will displace the Black Hamburgh for Christmas use.—STEPHEN CASTLE, *West Lynn.*



THE Committee of the KINGSTON AND SURBITON CHRYSANTHEMUM SOCIETY met on Wednesday evening, the 18th inst., and passed the proof of schedule and proposed judges for next exhibition, &c. After obtaining the consent of the judges, the schedules will be put in the printer's hands and will soon be issued. Nearly £30 have been added to the prize list and pretty well distributed through the schedule, making a new class for twelve Anemone Japanese, not less than four varieties, and some new classes in the amateur division. A new class has been provided for Epiphyllums, as an experiment to try to get plants suitable for decorating the centre of the tables in combination with Primulas and Cyclamens. The disbudding of the Pompons is prohibited, as growers are apt to get them too near small reflexed flowers. It is allowed in the Anemone Pompons, as the better they are grown the more fully developed are their centres.

— AN esteemed correspondent informs us of the death of Mr. ALEXANDER MEIKLEJOHN in the following note:—"Mr. Alexander Meiklejohn died at his residence, Raploch-by-Stirling, on the 18th inst., in his 88th year. A lover and cultivator of several florists' flowers, he is most widely known as an ardent grower and raiser of the Auricula. Many in all parts of the kingdom will hear with regret of his death, and one who had frequent opportunities of meeting him would in the pages of the Journal, of which he was a constant reader, express sincere sorrow at the severance of a friendship cemented by kindred tastes. Recurring attacks of bronchitis brought him sadly down of recent years; yet at the beginning of the present one he was surprisingly hale and hearty. He has at last succumbed to a severe illness of a few weeks. He and a daughter, who has been, and still is, seriously ill, were tended by loving hands of the members of the family, who have the sympathy of many friends in their sorrows and bereavement."

— AT a time when all the hardy Irises are prisoners in the ground outside, the beautiful and graceful greenhouse species, IRIS FIMBRIATA, is gay with blossom, its arching branching spikes lying over the dark green shining foliage, and bearing a profusion of flowers for several weeks in January and February. Unlike the hardy Flags, *I. fimbriata* is evergreen, and its leaves are quite handsome enough to make it worthy of a place in the greenhouse. It has a hardy constitution, thriving on the meanest fare and in the most untoward position. Still, like every other hard-lived plant, this Iris is all the better for a little kindness in regard to soil and light. At Kew it has been an inmate of the succulent house for many years, flowering every year to the admiration of all who see it. It may be seen in fine flowering condition there now.

It is also one of the treasured plants in the collections at Oldfield, Bickley, the residence of F. A. Philbrick, Esq., Q.C., where a plant is now flowering profusely in a greenhouse. In a few other gardens it may be seen, but *I. fimbriata* belongs to the neglected beauties, for it remains a comparatively unknown though a really useful winter-flowering plant.

— THE CAMELLIAS AT BEDFORD HILL HOUSE, BALHAM, the residence of J. Brand, Esq., are now in fine condition and bearing a profusion of bright well-formed flowers. In the conservatory the display is particularly good, the plants being trained to a wall about 14 feet in height, which is covered with vigorous growths and thousands of flowers. Several unnamed varieties are grown, but *C. imbricata* is recognisable together with *C. Mathotiana* and the old but superb *C. alba plena*, which is loaded with flowers. The most remarkable of all is, however, a handsome specimen of *C. Donckelaarii* about 12 feet high, which has its branches drooping with the weight of the large bell-like beautiful flowers. The variety also is an unusually fine one, of a rich red tint boldly marbled with white. When in such fine condition this variety can scarcely be equalled, and Mr. Rapley prizes it accordingly.

— THE fifty-sixth ordinary meeting of THE ESSEX FIELD CLUB will be held in the great hall of the Loughton Public Hall, Loughton, Essex, on Saturday, February 28th, 1885, at half-past six o'clock. The following paper will be read:—"Report on the East Anglian Earthquake of April 22nd, 1884," by Raphael Meldola, F.R.A.S., F.C.S., &c. The hall will be open at 6 P.M. for the convenience of exhibitors. As stated in former circulars, every facility will be afforded to those bringing microscopes and specimens, &c. The hall is only a few minutes' walk from the Loughton railway station, and the usual reduction on return tickets may be claimed at Liverpool Street, Stratford, and Woodford stations. The library remains at the head quarters, 3, St. John's Terrace, Buckhurst Hill, and is open every Thursday evening during the winter session, from seven to nine o'clock. Special Meeting.—Owing to a formal objection taken at the last meeting, the proposed alterations in the rules were not then considered. On behalf of the Council a special meeting is therefore called at the head quarters of the Club, 3, St. John's Terrace, Buckhurst Hill, on Wednesday evening, March 11th, at 7.40 P.M., for the purpose of proposing the alterations in and additions to the rules.

— THE WEATHER in North Britain has been very severe recently, snowstorms and violent gales having caused much damage in the west and north of Scotland, especially near Glasgow, in Ayrshire, and at Dundee; while some parts of Ireland have also been visited by similar storms. In the south, after two or three days of rather keen winds, the weather has been quite spring-like, bright and warm during the day, with frosts at night and occasional rain. Vegetation is advancing in some favoured districts, and we are informed, as a further sign of the approaching spring, that a thrush's nest with eggs was found last week in the shrubberies at Old Warden Park, Biggleswade, which is considered rather early for that part of the country.

— "F. G., Dorset," writes—"Seeing an article in the Journal about growing VIOLETS, I thought I would send you a few of mine grown under glass and outside. I have often found it a matter of great difficulty to grow these satisfactorily until this last season, and I may say I have had some very fine ones, and the way I manage them is by taking the runners off and growing them in good manured ground the same as Strawberry runners are done, and I find plenty of bloom at the proper time. I prefer young plants to split-up old ones. I have found them to do much better under my treatment." The blooms sent are very handsome samples of a large dark form of the Neapolitan, and very fragrant.

— NOTABLE as was the specimen *MASDEVALLIA TOVARENSIS* figured in these pages last week, we are informed that Mr. Philip Crowley, Waddon House, Croydon, has had a still more remarkable example. This is growing in a 7-inch pot, and for some weeks, ending about three weeks since, it had eighty-six flowers open at one time. The species is indeed surprisingly floriferous, and will become a most useful plant for furnishing supplies of flowers.

— MR. C. HERRIN, Chalfont Park Gardens, sends us some blooms of the fine old semi-double *CAMELLIA DONCKELAARI*, and remarks: "Here this Camellia is highly appreciated for general decorative purposes. It keeps fresh in water several days longer than the double varieties, and used for single specimen glass on the dinner table it is very effective." The blooms were very handsome, of a brilliant red colour, with white

marblings and markings, and a dense cluster of stamens in the centre, rendering it quite unique. It is a strong-growing useful variety that is of much value in gardens. Mr. Herrin also sends us a flower of *Cyclamen persicum* with thirteen petals. It is of great size, pure white, but has a somewhat malformed appearance.

— MR. S. MORTIMER, recently gardener to Major Storer, Purley Park, Reading, states that he has resigned his situation, after nine years' service, during which time he has taken over two hundred prizes for fruit, plants, Orchids, and vegetables. We have frequently had occasion to favourably note Mr. Mortimer's productions, and his skill as a practical gardener is well known.

— THE schedule of the MASSACHUSETTS HORTICULTURAL SOCIETY announces the following Exhibitions to be held in Boston during 1885:—Spring Exhibitions, March 19th and 20th and May 9th; Rhododendron Show, June 6th; Rose and Strawberry Show, June 23rd and 24th. Other shows will be held every week in July and August. The annual Show will take place on September 15th, 16th, and 17th; the Autumn Fruit Show on October 3rd; and the Chrysanthemum Show on November 12th and 13th. Prizes varying in value from one to forty dollars are offered at all these shows, the total number of classes provided throughout the season for fruit, flowers, plants, and vegetables being 608. In addition to the ordinary prizes, the following Hunnewell triennial premiums are offered:—"For an estate of not less than four acres, laid out with the most taste and kept in best order for three consecutive years," 160 dollars (about £32); "For an estate of not less than three acres," first prize, 120 dollars; second prize, 80 dollars.

— MESSRS. BARR & SON, King Street, Covent Garden, send us blooms of the charming *CORBULARIA MONOPHYLLA* (*CLUSII* and *ALBA*), and remark that "These beautiful snow-white flowers have been open with us from the middle of January, and will continue so for some weeks, under one of Boulton & Paul's frames. Early in autumn we planted the bulbs in a mixture of sand and loam, the bed raised a few inches above the general level, and covered with the frame, the lights being raised sufficiently to admit air, but protect from the cold autumn rains. When the leaves had advanced an inch or two the sides of the frame were alternately raised, thus fully exposing the plants, except when there was a severe frost or heavy rains, then air only was admitted. This will be continued until the weather become dry and warm, when the glass will be kept constantly down, only admitting air."

— FROM the same firm also come blooms of the EARLIEST *NARCISSUS* (*NARCISSUS PALLIDUS PRÆCOX*), "which is now expanding its beautiful sulphur-coloured blossoms in the open, and will, as happened last year, be nearly a fortnight in advance of all others in our bulb grounds, Tooting; the first bloom opened on the 15th inst."

— "W. N." sends the following respecting *ASPARAGUS PLUMOSUS*—"Instead of Adiantum use the Plumose Asparagus," is the advice given to a bouquetist in search of Fern for his flowers, and which may be extended to all who have to do with floral decorations. When in town I invariably walk through the Central Avenue in Covent Garden Market and look out for ideas, where new ideas in flower arrangement may be expected to appear, but I have not yet seen *Asparagus plumosus* employed by any of the decorators there. To my taste there is no comparison between Adiantum and the Asparagus for bouquets, wreaths, and those long graceful flower arrangements now so popular with ladies. A spike of *Odontoglossum crispum*, with a long evenly furnished branch of the Asparagus arranged in such a way as to make each flower appear surrounded with a delicate green shade, is one of the most charming combinations I have ever beheld. Better still, this Asparagus will last at least a month when cut and placed in water. Considering that plants of it yield an abundance of growths which may be cut and cut again without injuring the health of the plant, and that every little branch when placed in heat will strike root and grow into a plant in about two months, there is no reason why this Asparagus should not be grown by scores in almost every garden. I have never known its use along with flowers to fail in giving delight."

CUCUMBERS.

CUCUMBER culture in winter is not general. It is only in large gardens and with the help of well-heated houses or pits where it can be done successfully, but in spring, summer, and autumn almost everyone who possesses a frame tries to grow Cucumbers, and if they only take care

to select a good variety all may succeed. Cucumbers may be grown with two objects in view, one being for table and market, the other for exhibition. For these objects many will be inclined to try two types, and as matters generally stand they will be right, as long Cucumbers are usually esteemed most for exhibition; while the shorter ones are best for the table, and, in my opinion, for market too. I would never wish for a Cucumber more than 12 inches or 15 inches long for table, and if I were buying them in the market I would never have anything to do with fruits 2 feet in length. Very long fruits may be interesting to some, but they are not profitable to grow, as they are not so abundant as the short ones or so good in flavour and convenient.

For exhibition purposes I am very much in favour of fresh finely formed short fruits, and I would sooner give a prize to neat ones 15 inches or so in length than recognise others double that length with nothing but their size to recommend them. However, I know everyone is not of this opinion, and long Cucumbers must be grown to suit some, and where this is the case I am sure there is no better variety than Tender and True. It is, I believe, one of Mr. J. Douglas's productions, and was sent out some years ago by Messrs. Veitch. Strictly speaking, I have found it rather tender in constitution, not excessively productive, but in other respects it is valuable. The fruits usually attain a length of 30 inches, are dark green in colour, very handsome in form and excellent for exhibition where large fruits are preferred. It is much better as a summer variety than for winter, and may be grown in frames in the summer, but it comes to greatest perfection in a house where the plants are tied up and the fruit hang down.

Of good all-the-year-round Cucumbers what has of late years become known as Carter's Cardiff Castle variety heads the list. It has a splendid constitution, fruits freely in a house all the year round, does capitally in a frame in summer, and is most profitable at all times. The fruits average 12 inches in length, are of a capital form, being as thick at each end as in the centre, and they are produced in great numbers. The quality is all that could be desired, and as a Cucumber for market or home use it cannot be too highly recommended. Some time ago a writer in the Journal gave interesting accounts of some wonderful Cucumber crops grown in Lancashire, and we obtained seed of the varieties grown there, but we cannot put the same value on them as on the Cardiff variety.—A KITCHEN GARDENER.

NERINES.

As the excellent drawing of *N. Fothergilli* major—the best of all the Nerines—which occurs at page 132 in the Journal, is likely to make these handsome greenhouse bulbs sought after, a hint on the treatment that is most suitable for them when grown in this country may be added to the descriptive note which accompanied the figure referred to. Success in the cultivation of Nerines, or at least of the garden kinds, depends almost entirely upon their being grown in a little warmth during winter, resting through summer, and allowed to flower in the autumn. It will be perceived that in this respect Nerines differ from the majority of popular bulbous plants, which make their growth in summer, are rested in winter, and brought into flower in spring and summer. This latter fact has, no doubt, caused many to treat their Nerines along with such plants as *Hippeastrum*, *Coburgia*, &c., with the result that the Nerines were a failure. When it is remembered that the Nerines are all natives of the Cape, about Table Mountain, the difference between the time when they are most active and the growing season of *Hippeastrum* and other New World bulbs will be easily understood. The same rule applies to the majority of Cape bulbous plants when grown in this country, and although some of them are not so particular as regards the time of growth as others, yet better results are obtained where these plants are allowed to rest in summer and started into active growth again either in winter or very early in spring. The success of Mr. Roberts and others who grow Nerines is due to a full recognition of the importance of this rule in regard to Nerines, and we commend it to those who desire to grow these plants and have a good yield of bloom every year.

After a Nerine has flowered its roots should be examined, and should they be healthy and the soil and the drainage good, it will not be necessary to repot them into larger pots. Many bulbous plants thrive best when root-bound, food being supplied in the form of liquid manure or guano when fresh growth is being made. As the cold weather approaches, or, say, in October, a hotbed should be made up in a frame, dung and leaves being the usual material employed. A layer of cocoa-nut fibre or ashes should be placed on the top of the bed, and into this the Nerine pots should be partly plunged. The sunniest possible position should be chosen, so that the plants may have the full benefit of what little sun light there is in winter. A temperature of about 55° will be quite high enough, though on bright mild days it might rise to 60°. Ventilation sufficient to keep the atmosphere in the frame fresh, and to allow excessive moisture to escape, will be necessary. Keep the soil moist without watering it to soddenness, and for strong bulbs in small pots, or which have not been repotted for some time, liquid manure, or a top-dressing with some of the patent manures, will be found helpful to vigorous growth. By the time winter is over growth should have been completed, so that the plants may be then gradually hardened by exposure and withholding water. This will cause the leaves to wither. During summer the plants may be placed upon a shelf near the glass in a cool greenhouse or frame, and allowed all the sunshine possible. Water must be entirely withheld. By the end of July the flower scapes should begin to appear, when water will be again necessary, after which the soil may be kept moist and the flowers assisted by supplies of weak liquid manure.

It will be seen that at no period of the year is shade required by Nerines; they enjoy all the sunlight they can get, both when growing and when at rest. The soil preferred by Nerines is a rich light loam without either sand or leaf mould. The pure loam lasts longer, and preserves the roots and bulbs better when at rest than any other mixture would. Mealy bug sometimes attacks Nerines, as it does most bulbous plants, and it is no easy task to free bulbs of any kind from this pest when once it has gained a footing upon them. The only cure is by removing all the dead scales from the bulbs, and especially from the necks of the bulbs, where the bug lurks in waiting for the appearance of young leaves. A weak solution of petroleum may be used, but care must be taken to prevent it running into the hearts of the bulbs.

Although popularly known as *N. Fothergilli*, the plant represented in the figure above referred to is a variety of the well-known *N. sarniensis* or Guernsey Lily, of which, in addition to the above, we have several distinct and beautiful forms. *N. pudica* is a handsome-flowered species, the flowers being large, pure white, except for a streak of red down the middle of each segment. Other handsome kinds are mentioned on page 132. There are several pretty and distinct hybrids in cultivation now, which have been obtained by Messrs. Henderson and Herr Max Leichtlin, so that altogether the genus Nerine comprises a goodly collection of extremely useful greenhouse bulbs, which by attention to the particulars mentioned above may be successfully managed by anyone possessing a greenhouse and frame.—W.

GUM ON CAMELLIA LEAVES.

I AM much obliged by your having submitted my question as to the gum on Camellias to a skilful grower of the plant, and for his full and instructive answer on page 141. I am sorry that I did not forward a specimen of one of my plants, but I now send one. I may remark that I notice this last day or two that the exudation has become thinner and less glutinous than it was.

With all deference to the opinion of the skilful expert, I cannot think the gum on my trees arises from scale or ordinary blight, as I cannot detect any, or next to none, on the plants. I shall be very much obliged if you can give me any further information on an inspection of the shoot I now send you.

In answer to your inquiry on page 162, I beg to say that the only climbing plants on the roof of my house within many feet of the large Camellias are a *Tecoma jasminoides* and a *Tacsonia Van Volxemi*. The *Tecoma* is trained to a single rafter directly over—at about 2 or 3 feet distance—the Camellia most affected, but hardly, if at all, over the other Camellia. The *Tacsonia* is similarly over the other Camellia, but not for more than, if so much as, 1 foot in length. The *Tecoma* has been growing on the roof for some years, but is not of thick growth, and flowered beautifully last year. This was trained and looked over last autumn, when it was found to be clean, except, I think, a very little mealy bug on it. The *Tacsonia* was only planted last year, and did not grow up so as to overhang the other Camellia till the autumn, and is, I feel sure, quite free from blight. The plants in my conservatory would, I think, be pronounced by anyone as very clean, except perhaps a few *Abutilons* in pots, and about 5 or 6 feet high, which have a little green fly on them, and two or three of which stand near and under the Camellias, and a large *Habrothamnus* planted out at the opposite end of the house to the Camellias, and which certainly has some quantity of green fly on the flower trusses.

To show that the gum does not proceed from other plants overhanging the Camellias I may remind you of what I mentioned before, that a small Camellia in a pot which I myself cleaned, removing a large quantity of scale and washing with a sponge and soft water every individual leaf, did on the following day show on one or two leaves two or three fresh spots of the gum, thereby indicating, as it seems to me, that the mischief must be the result of some constitutional malady, so to speak, and not arise from an external cause.—BORDERER.

[The glutinous matter that is often seen on Camellia leaves arises from two causes, the first and most common being the presence of insects such as scale on the plants themselves, or insects such as mealy bug and aphides on other plants either above or contiguous to them; the second by drought at the roots, which results in inspissated sap, thickened as in liquors by the process of evaporation, and this thickened sap, not being able to circulate freely, oozes from the pores of the leaves. Each person can now determine the point for himself; but with the object of aiding we sent a portion of the specimen referred to to the gardener whom we first consulted, and whose practice is wide and successful. We also sent a specimen to Mr. Lynch, the Curator of the Cambridge Botanic Garden, a practical and scientific horticulturist, who has given special attention to this subject of gumming. We cannot do better than publish your letters with those referred to, as the subject is of general importance, and we will readily insert communications pertaining thereto, whether they are in accordance with our views or not.]

MR. LYNCH'S LETTER.—“In reply to your letter of the 15th inst., I am pleased to state my opinion with regard to the glutinous matter on the Camellia leaf. I have little doubt in believing it to be an insect excreta. There is no sign of its having exuded from the tissue of the leaf, which is uniformly healthy so far as I can see either with or without the microscope. It dissolves easily in a little water applied to the leaf, and may be removed in a short time with a hair pencil, when the epidermis appears to be quite sound. To me this has precisely the appearance of an insect deposit, and such I believe it to be, because while the leaf is normal and

equal in appearance all over the deposit is partial, being thick over certain parts and absent from others, just as would happen by the protection of leaves above. The honeydew is exactly like this, and such this is, I should say, for there is nothing to indicate anything to the contrary. It will be found, I suspect, that the Camellia in question has been near some insect-infected climber or taller plant. There is a fungus on the leaf—no doubt nourished by the 'glutinous matter'—but it has nothing to do with the cause, and is only an after appearance."

A CULTIVATOR'S LETTER.—"Judging from the sample sent, and from the whole of the evidence before me, I am further convinced that the glutinous matter is the result of excreta from insects. I am returning the foliage sent by "Borderer" as well as some from a tree infested with scale; the leaves selected are from the centre of the tree and directly under branches on which scale is established. The last two letters from 'Borderer' confirm in a marked degree that the opinion I formed and gave a fortnight ago as the correct one. The mealy bugs on his *Tecoma*—however limited the numbers may be—are sufficient to account for the gum on the foliage of his *Camellias*. I am not surprised that he has discovered fresh evidences of the glutinous matter on the pot plant he sponged. I should have been very much surprised had he not done so, for however carefully the operation was performed it would be next to an impossibility to eradicate every scale. I have on many occasions been surprised myself at the amount of excreta and the rapidity with which it was formed after the trees had been washed and cleaned. The same glutinous matter is deposited on any plant below where aphides is established, although in a less marked degree, unless the insects are very numerous. A *Cattleya* sponged only a few days ago has one leaf covered with a gummy substance, the same as that upon the *Camellia* leaves. What has caused it? not internal influences, but yellow aphides—very few in number—on the young growth of a *Dendrobium* suspended above the plant upon the stage. The cause is external, not internal, and if the advice given is followed and the bug cleared from the *Tecoma* and scale from the plants, if any exist upon them, which, from "Borderer's" own showing, is the case, the glutinous substance will also disappear."

[The *Camellia* leaves sent by our correspondent with "gum" on them are exactly like those sent by "Borderer."]

MRS. PINCE GRAPE.

WHEN I read Mr. Reid's note on the above Grape (page 131) last issue, I thought his remarks were not very clear. He says, "This Grape when fully ripe should be kept in a low temperature, and should be shaded from the sun by means of brown paper to preserve the quality and colour of the fruit. No water should be spilt on the paths, or the fruit is sure to get bad and likely to drop from the stalk." He also says, "The temperature should be kept at 40°, as the above Grape will grow better at that heat than higher if the sun be entirely excluded." I think most growers have sufficient knowledge to know that when Grapes are ripe a high temperature is not required; and as to the shading of the fruit, the foliage should effect this, as all black Grapes require abundance of foliage to colour them well, and by the time the Vines lose their leaves there will be very little sun to produce any ill effects. As to water being spilt in the house, causing the fruit to go bad, it is not remarkable, as all Grapes are subject to this if dampness is allowed about them. If a temperature of 40° is suitable for growing this Grape surely a great error has been made in planting it in Muscat houses, which is usually the case, and I should like to know in what situation and position a house should stand so as to command a temperature of 40° during summer.—A. ANDERSON, *Lea Wood*.

THE INSECT ENEMIES OF OUR GARDEN CROPS.

THE TURNIP.

WERE they beings possessed of intelligence, sundry species of insects might rejoice that it has pleased man to cultivate the Turnip freely in fields and gardens, since they are thus provided with an agreeable food in its roots, leaves, or flowers, lacking which they must have subsisted upon other Crucifers if as attainable yet less attractive. Any measure of gratitude, however, the insects could hardly be expected to feel, since no sensible gardeners allow them to revel in peace, though in the case of several enemies of the Turnip all precautions taken and remedies used will fail during some seasons to bring up the crop to an average yield. And every year affords fresh proofs of the long-unobserved fact, that to keep insects under it is not sufficient to kill them or drive them away; the cultivation of the plant must be pursued on the best methods, to ward off vegetable disease and to lessen the danger of insect attacks.

Amongst the foes of the Turnip the fly must undoubtedly take the lead. It is an insect noted for its skipping rather than its flying propensities; hence evidently the popular name should be flea, not fly, though the species is neither flea nor fly, but a beetle. Yet it can fly as well as jump, showing activity principally in warm bright weather. When the atmosphere is damp and heavy this insect is sluggish and little inclined for any movements. Under the common epithet of Turnip fly are included several species of *Phyllotreta*, the commonest of which is

that called somewhat absurdly *P. nemorum*, for it has no particular connection with woods or groves; indeed, one farmer reports that in his experience crops grown in shady places are likely to be exempt from its visits. This species has a broadish stripe of yellow upon the wing cases; another, with wing cases rather of a brassy hue, is that named *P. concinna*, which, having troths (to appearance) upon four of its six legs, has been styled the "tooth-legged hop flea" in some districts. The bluish-tinted *P. undulata* was another species that took an active part during 1881, when the crops suffered so severely from the destructive fly, that in more than twenty English counties a second or even a third sowing was necessary, and the loss in different ways amounted to hundreds of thousands. Scotland also sustained heavy losses, but Wales nearly escaped.

In referring to this too familiar insect we shall avoid repeating facts that are to be read in most books on horticulture, and confine ourselves to such as are of recent observation, while also correcting any misapprehensions that may be current. The exact number of broods during the season is uncertain, varying from three to five or even six, but on the whole its life history is tolerably clear. Although this foe of the Turnip will eat both the rough and the smooth leaves of the plant, it is chiefly mischievous to seedlings, therefore the first or the second brood are to be specially guarded against. In a backward season it may happen that the first brood of the maggots subsist upon wild Crucifers, such as Charlock and Hedge Mustard, the beetles or flies from which devour the Turnip leaves when ready, and deposit eggs also to produce the next brood of maggots; and it must be always remembered that the maggot, which generally lives about a week, burrowing in the leaves, which it quits to enter the earth for pupation, is on the whole less hurtful to the Turnip than the fly, which by its persistent attacks succeeds in killing many young plants. At the end of the summer there is a hatch of the fly or beetle that does no harm then, but lays up in all sorts of hiding places in and near fields, waiting through the winter to begin operations upon the seedlings of spring.

The association between this insect and several weeds which occur in all fields and by waysides, and which are much more abundant some years than they are in others, is a circumstance never to be forgotten. And we note in passing that it has been stated, as a small fact to the credit of the Turnip fly, that by its agency whole fields of Charlock which had been left neglected have been cleared of this undesired weed. Also a season when Charlock and its brethren are numerous (as this autumn, for instance, owing to the absence of frost) is likely to be followed by a bad year for the Turnip, a host of flies being fed up in the autumn. Careful removal of Charlock from all waste ground near Turnip fields may deprive the flies of the means of depositing eggs for the first brood of maggots if this is done early in the year. And that the flies conceal themselves in winter amongst stubble heaps, bunches of straw, and the like is certain, hence refuse of any kind that might shelter them during winter should be cleared away and burnt.

It has been repeatedly noticed that a crop of Turnips raised off land that has laid fallow through the winter and kept free from weeds is seldom injured by the fly. Satisfactory results may also be looked for when the ground has been well manured some little time before sowing, say with superphosphate drilled in. A thorough preparation of the soil in spring as soon as the weather permits by the usual methods, works in the moisture that may have been received during the winter, and the growth of the young Turnips will thus be hastened, unless the season is unfavourable; for while a cold spring checks them considerably, it is almost invariably the case that dry and mild weather about that time very much favours the increase of the fly. The fly is well known to be troublesome when Turnips are in succession to a green crop of the previous season, such as Vetches or Winter Oats; and the gardener or farmer who desires to be forward in his operations is no gainer here, since the early-sown Turnips are the greatest sufferers.

At the time of sowing many recommend that a small quantity of stimulating manure should be applied. Some prefer the artificial to the farmyard manure, and judicious watering should follow, in gardens at least; in fields there will not always be facilities for this, but one watering, perhaps, with liquid manure might be managed. As to profuse sowing, which has been tried on the chance of the survival of the strongest plants in the crop, and their shielding each other to some extent, it has scarcely proved satisfactory enough to be generally recommended. From the certain preference the fly shows for white Turnip when it can be had, there is advantage in drilling some rows of it amongst Swedes or mixing the seeds; while the partiality of the fly and its maggot for Charlock has suggested that Mustard seed be mingled with that of the Turnip, which will lessen the loss upon the latter

when flies are prolific. Steeping the seed, before sowing, in either petroleum or turpentine may by the subsequent diffusion of their odour keep some flies from laying eggs on or eating the smooth leaves. It is with an early crop that this preventive measure would be likely to answer.

All the diligence imaginable may fail, however, to prevent a serious attack upon a crop of Turnips by so numerous a host of flies, that the destruction of them seems inevitable, and in fields, as an extreme measure, sheep may be driven over the Turnips, keeping the animals well together; the fly will be nearly exterminated, and the crop may possibly be saved. The list of dressings that have been resorted to is a long one. Whatever may be tried it should be used only when the dew is upon the plants. Soot and lime are commonly employed, and they do some good. Other applications that might be advantageous could scarcely be tried on fields. Mr. Fisher Hobbs' remedy, stated to be nearly infallible, consists of suitable proportions of sulphur, fresh lime, gas lime, and road scrapings well combined, then gradually strewed along the rows.—ENTOMOLOGIST.

SELECT ANNUALS FOR STOVE AND GREENHOUSE.

THE following notes are written more for the benefit and instruction of amateurs than for gardeners, most of whom will be already acquainted with the subjects under notice, but should any of the latter be reminded of and induced to grow again some old and neglected favourite, my efforts will have been more than doubly rewarded.

It is almost surprising what a beautiful display of flowers can be obtained, and what a tasteful effect may be produced, by the judicious arrangement of about a dozen plants of each of the following kinds—*Thunbergia alata*, *Browallia elata* and *B. speciosa*, *Martynia fragrans*, Balsams (*Impatiens balsamina* or *I. hortensis*), *Celosia pyramidalis*, and *Zea japonica variegata*, with several pots of *Mignonette* (*Reseda odorata*) filling the house with its delicious perfume. With such material we have sufficient to fill the stage of a medium-sized greenhouse, and present to the eye such a variety of form and colour as none but the extremely fastidious would desire to alter or improve. Another important point is the small first cost in connection with this houseful of plants and flowers. Seed of a dozen kinds of plants to be mentioned may be purchased for about 3s., an outlay within the reach of all who possess a greenhouse. The cultivation of these annuals is also comparatively easy in most cases. Anyone that can grow Cockseombs, Primulas, Fuchsias and Pelargoniums, will be successful with *Thunbergias*, *Martynias*, *Celosias*, *Zeas*, &c. Be it remembered that nearly all plants present to the eyes of those accustomed to observe, a true index, within certain limits, of their cultural requirements to a greater or less degree. When once the physiology of a plant is even but partially understood, and the climatic conditions of its native habitat known, it is astonishing how easy the cultivation of that plant becomes; therefore I would say to all desirous of being successful cultivators, Study the nature of the plants under your care, no matter whether it be a Cabbage or a Plum, an Orchid or a Vine, and act accordingly.

THUNBERGIA ALATA.—The first plant to which I wish to draw attention is the above, a showy stove or greenhouse twining plant, growing well under either hot or cool treatment, according to the time of year. It is an old-fashioned flower, too seldom seen nowadays, but one which rarely fails to attract a due measure of admiration from all who have the pleasure of seeing it under favourable conditions. The genus belongs to the family *Acanthaceæ*, and embraces about a dozen species and varieties, none being annuals strictly speaking, but the species under notice is treated as such. Nearly all are natives of the Old World, being found chiefly in the East Indies, Madagascar, Sierra Leone, Nepal, and Natal, whilst *T. coccinea* is said to be a native of Trinidad. The species under notice embraces two varieties, *T. alata alba*, and *T. alata aurantiaca*, from Madagascar, and the species *T. alata* is a native of the East Indies, said to have been introduced into this country about 1823. The genus is named in honour of the celebrated traveller and botanist, Thunberg.

When the three species are grown, whether as specimens in distinct colours or mixed, the effect is very pleasing. Being climbers they are adapted for pillars or trellises, but perhaps they are most beautiful when grown as large specimens in baskets and their slender stems are allowed to entwine about the suspending wires or chains or to fall over the sides of the baskets in festoons, and their elegant shoots twisting hither and thither and giving grace to the whole. Sometimes they are

grown in pots with some twiggy sticks inserted for them to ramble over, but unless the sticks are well covered with natural foliage, such as the Spruce Fir, or by the *Thunbergias* themselves, such method is not the most satisfactory way of showing off their intrinsic beauty to advantage. One of the best ways to show them is to allow the shoots to droop over the pots and drape the front of the stage on which they are growing, when they will form an edging that for elegance of form and brightness of colour few plants will surpass. *Thunbergia alata* and its varieties are also well adapted for edging groups of plants in large ornamental vases and tazzas, their slender and pendent shoots furnished at moderate intervals with cordate leaves and bold dark-eyed flowers, breaking the stiff and formal outlines of the vase, &c., without hiding or detracting from its beauty.

CULTURE.—This is very simple, and for that reason alone it is essentially an amateur's plant, but it is subject to red spider, and in consequence many admirers have ceased to cultivate it; but if all the plants of our gardens that are liable to be infested with even three or four kinds of parasites were to be eliminated, what would become of our Roses, Azaleas, Cinerarias, and Chrysanthemums, Peaches, Grapes, Melons, &c., any one of which requires about five times the amount of skill and care to bring to perfection? Seed may be sown at the same time as Stocks and Asters in a shallow box or pan, which should previously have had drainage and 2 inches of light soil placed therein. The soil may consist of loam and leaf mould in equal parts, with a dash of silver sand or river sand. Amateurs and cottagers who cannot obtain leaf mould should use loam of light and open character for these and almost all other seeds. The holes in the bottom of the box or pan having been covered by inverted oyster shells or crocks, and the coarse siftings of the soil distributed thereon, the fine soil is added and made level. The seeds should not be scattered indiscriminately, but be placed singly at distances of about 2 inches apart, not only to allow plenty of space for the free development of their large cotyledons and subsequent leaves, but inasmuch as they will not require pricking off, also to admit of each plant being carefully lifted with plenty of roots. Cover the seeds with three-quarters of an inch depth of soil, and press it gently down smooth and level, water with tepid water through a rose, and place on a gentle hotbed, or in any other warm and moist place. In about six weeks, if the seedlings have been duly cared for by keeping the soil moist, they will be ready for transplanting into baskets or pots in which they are to flower, but it is a good plan to water the plants three or four hours previous to disturbing them, so that their leaves may become fully charged with moisture, and also to cause the soil to cling more tenaciously to the roots, thus enabling the young plants to withstand successfully the check they are about to receive, and greatly facilitate the operation of transplanting. The soil should consist of two parts loam, one part leaf mould, and the same proportion of manure, cow or horse, dried, and passed through a half-inch riddle, and one part sand. This compost must be used in as rough a state as possible in order to allow a free passage to the abundant supplies of water the *Thunbergias* will shortly require.

IN BASKETS.—The size of the baskets is immaterial. The first operation will be to place some moss on the bottom and round the sides to retain the soil, which should then be put in to a depth of 3 or 4 inches. Place the *Thunbergias* on the soil at intervals of 5 or 6 inches, with their leaves projecting outside the basket. Place in more moss and soil and plants as before and continue the operation in layers until the top of the basket is reached, taking care that the plants in each layer are opposite the spaces of the layer below; the upper surface of the basket is then furnished with plants at the same distances apart. When the planting is completed give a good watering and suspend them in a warm and moist atmosphere until the plants commence flowering, when they should be moved to a cool greenhouse or conservatory. Water should be freely applied both to the foliage and roots during the growing period, or rather until the flowering period, for they continue to grow the whole summer and autumn if properly treated.

IN POTS.—They are very little trouble in this way, as the seeds may be sown in pots at once if so desired; three or four seeds in a 6-inch pot will be quite sufficient. I sow more in the seed box than will be required for baskets, and transfer them into 6-inch pots, three in a pot, giving them the same soil and treatment as recommended for baskets. At no time should *Thunbergia alata* suffer from lack of moisture at the roots, for any insufficiency in that respect is sure to be followed by the plants being infested with red spider, which quickly disfigure them. Therefore keep the enemy at a distance by timely applications of water and nourishment, and by taking care that a high temperature is accompanied by proportionate humidity. But should

the enemy obtain a foothold several applications of a weak solution of softsoap and sulphur will hold them in check, if not entirely dislodge them. I grow them amongst miscellaneous stove and greenhouse plants without any trouble beyond anticipating their requirements.—J. U. S.

(To be continued.)

ROSE APHIS AND MILDEW.

I HAVE never had so little annoyance from aphis or mildew among my flowers as last year. This I attribute to the use of Fir tree oil. I applied it first through Hughes' spray-distributor to destroy green fly that made their appearance on Tea Roses in pots in a frame. This it did most satisfactorily, and I subsequently applied it to all my Roses in the garden, using there a fine-rosed watering can. There was no appearance of green fly for a very considerable time, and as soon as they were observed a similar application destroyed them. I did not afterwards wait till they returned, but anticipated their attack. In all seasons, wet or dry, my Roses used to be more or less severely mildewed, but while gardens near, that usually suffered less than mine, were severely scourged, my plants remained clean. On returning home, indeed, after a fortnight's absence in September I found the enemy had seized the opportunity, and mildew was for the first time rampant. Some of the more prickly varieties especially were badly attacked. I immediately resorted to the oil with more gratifying results than I had ever obtained from sulphur or other applications. I hope another season will confirm the idea that I have now the means of coping with what has always been a dreaded enemy by the use of a cleaner, more easily prepared, and cheaper mixture than any other I had used. I have a high opinion of it as a preventive. To an occasional bedewing with it at about the strength prescribed I am convinced it was owing that, while a hedge quite close by was for a time white with mildew, not a trace was at any time in the year visible on the Teas in the frame.—A NORTHERN AMATEUR.

THE BEST NORTH AMERICAN LILIES.

In the following notes reference will only be made to such varieties as thrive best in this country. I would rather have included some others, but am unable to recommend them for general cultivation, as they are what are termed "miffy." Happily, however, there are numbers of species and varieties which are highly ornamental and easily grown, without any elaborate preparation of soil or unusual accommodation. The bulk of those mentioned below are found under natural conditions in well-drained sheltered positions, such as at the foot of hills or on the slopes of larger mountains, usually in nooks on the margins of woods; but the chief shelter they receive is from grass and other herbage or small shrubs, the latter being a characteristic feature of the floras of their habitats. This knowledge should be of some value to us in determining a position for them in the garden. There are, however, two or three exceptions; for example, *L. Parryi*, a species I should advise all lovers of Lilies to grow, occurs in wet marshes. *L. canadense* and *superbum* also are found in damp and at times swampy places; consequently they require, or at least I have found they thrive better in a damp position, especially if that position can be kept moderately dry during winter. The failure with *L. Parryi* is, I believe, frequently due to superfluous moisture in winter, although it is absolutely necessary to supply it by some means with abundance of moisture during summer. Natural conditions cannot be effectively imitated with our precarious climate, so we must do the best possible under the circumstances.

As to the soil best suited to these handsome Lilies I am not sure whether any rigid rule can be laid down, as I have tried them in various composts with almost similar results. One batch was planted in peat, leaf soil, and sand; another in light sandy loam well enriched with manure. Both have done well, but I think they grew tallest in the peaty compost, but perhaps this was due to the retentive character of that soil as regards moisture. With the exception of *L. Parryi* and *L. canadense* (typical), I believe all those described will thrive in ordinary soil, providing plenty of decayed manure is arranged beneath the bulbs, not necessarily in immediate contact with them, but within reach of the roots. Perhaps I had better qualify this statement, having regard to stiff clay soils; in such they are not happy, but a good stiff loam is especially suited to some. I was very much struck with the luxuriant growth of some, especially the variety known as *carolinianum* or *Michauxii*, in a soil of this character in Derbyshire, where the stems grew 6 feet high and were very floriferous. Writing from memory, I do not think they produce roots from the base of the stems like several other Lilies, hence top-dressing is not very beneficial. It is far preferable to well enrich the ground with manure at the time of planting, and when the ground is exhausted lift and replant again. I usually plant the bulbs 6 inches deep; it does not

matter if they are 8 inches below the surface, particularly the strong-growing ones. *L. Parryi* and *canadense* I find do best in a shady very sheltered position with a mixture of loam, peat, leaf soil, and sand in equal parts, and if the season is at all dry give copious supplies of water, but from the time that the stems die withhold the supply, and during very wet times cover them with a handlight or something to prevent the effects of excessive moisture. *L. Washingtonianum* and *Humboldtii* like a deep rich loam, with a warm well drained position, when they are really charming species and withal so distinct. The following I consider the best of the North American Lilies, and in describing them I have adopted the arrangement advocated by Sereno Watson, which in my opinion is the nearest approach to perfection.

L. CANADENSE.—This usually grows about 2 feet high, producing slender stems, clothed, lanceolate leaves arranged in whorls, and terminated by a few pendant flowers; the perianth is bell-shaped, yellow, spotted inside, especially below the seg-



Fig. 30.—*Lilium canadense*.

men's, slightly recurved (fig. 30). It is a very distinct, and, to my mind, pretty species, and can easily be distinguished by the bulbs, which are often supported on almost naked runners. It was one of the first of the introduced Lilies from America, having been figured by Parkinson (*Parad.* 32, t. 2), where also a good description is given. It is very variable in character, mainly in the floral colour, as distributed over the continent of North America, passing from yellow to deep orange red.

L. COLUMBIANUM.—A charming species, growing from 2½ to 3 feet high, the slender stems scantily furnished with more or less lanceolate acute, in whorls below, more or less scattered towards the top. Flowers produced in a racemose umbel, of a rich yellow orange colour, the perianth segments being 1½ to 2 inches long, and very sharply reflexed, the inner surface thickly dotted. It was considered at one time synonymous with a variety of *L. canadense* called *parviflorum*, which it closely resembles in habit and flower, but the bulb is very different, being erect and not rhizome-like. It is found from British Columbia to Northern California, perhaps more abundant on the foot hills of Sierra Nevada than anywhere.

L. HUMBOLDTI.—One of the best of all hardy Lilies, growing from 3 to 5 feet high, with numerous whorls of bluish-green leaves, oblanceolate in form, acute, with undulated margins

somewhat scattered towards the top. Flowers numerous in racemes, pendant, of a rich reddish-orange colour, copiously claret spotted inside, the perianth segments sharply reflexed from the middle. It is confined to California, occurring on the western slopes of Sierra Nevada, and along the whole coast range from Santa Barbara to San Diego. It is synonymous with *L. Bloomerianum*, and there is a variety often called *ocellatum* which has yellow freely spotted flowers. The bulbs are large and very distinct.

L. PARDALINUM.—One of the aristocracy in Lilies, growing 4 to 5 feet high under favourable conditions; last season being

ously defined and rendered especially distinct by [the central colour; the leaves are also said to be different, but I have seen many which pass muster as *californicum* which could not be honestly separated from other forms of the species. I am content to grow and love them all.

L. PARRYI.—A superb Lily, growing from 2 to 4 feet high, often less than the latter height; the stems rather slender and thickly clothed with linear oblanceolate leaves, usually evenly scattered, never in whorls. Flowers canary yellow, about 3 inches across, sparingly covered with fine dots, sometimes nearly free from spots, the segments slightly spreading and



Fig. 31.—*LILIUM ELEGANS* (*L. Thunbergianum*).

very dry some of my plants were only 3 feet high with narrow lanceolate acute leaves, mostly arranged in whorls, except at the upper part, where they are scattered. Flowers in umbels at the top, bright red, the upper two-thirds, the centre yellow spotted with black, the segments 2 to 3 inches long and sharply revolute. It is widely distributed throughout Northern and Central California, and is variable in the colour of the flowers and the disposition and form of the foliage. An effort has been made to establish varieties, but I am doubtful if any permanent characters can be guaranteed, one form being connected with what at first appeared another extreme form by intermediates. It has been claimed that the variety *californicum*, produces the most brilliant scarlet flowers of any, and that this colour is conspicu-

often recurved at the points. The bulbs are small, white, and rhizomatous. It occurs only in California, most abundantly in wet marshy ground about the San Geronio Pass. It is a most charming species, one of the most distinct in every way of the American Lilies, requiring, as I before mentioned, a damp sheltered position.

L. SUPERBUM.—A strong-growing and effective damp-loving species, producing stems from 4 to 6 feet high; leaves arranged in whorls and scattered, linear-lanceolate and acute. Flowers numerous in paniced racemes, pendant, 3 inches or more across, of a rich reddish orange colour, paler in the centre, copiously claret-spotted below; the segments sharply revolute. Widely spread from Canada southwards, varying somewhat. The variety

carolinianum (syn. *L. Michauxii*) is rather distinct; the leaves are broader, and fewer, while there are not so many flowers, deeper in colour, with decidedly broader segments. These are well worth growing, as they follow the pardalinum series in flowering, hence the display of such unique outdoor flowers is lengthened; and they are very free and vigorous growers, the variety not being so tall as the type.

L. WASHINGTONIANUM.—A magnificent species, growing from 2 to 5 feet high, the stoutish stems clothed with whorls of oblanceolate, smooth, pale green leaves, the upper ones scattered. Flowers arranged in large racemes, spreading; the perianth funnel-shaped, white, becoming tinged with purple, very sweetly scented. It occurs in various parts of Oregon and California, often in woods, or amongst shrubs and herbage. It is a most handsome and easily grown species, thriving well in good loam, well drained. No collection should be without it.

THE JAPANESE LILIES.—It is not my intention now to refer at length to all the Lilies which we have had from Japan, for they comprise a large number of species, and could only be satisfactorily dealt with in an article devoted to them. Nor is it my object to discuss the useful and beautiful *L. auratum*, *L. speciosum*, and *L. longiflorum*, which are now almost indispensable in many gardens. There is one, however, which deserves especial notice—viz., *L. elegans* or *Thunbergianum* (fig. 31), which in the number of its varieties is scarcely surpassed by any other species of the genus. It is also very hardy, strong in habit, free-flowering, and easily grown, for it succeeds in any sunny border of deep soil, being by no means particular as to the exact composition, though loam and peat appear to suit it best. The colours vary from orange to dark red, in most cases very rich and effective, particularly as the flower is bold in appearance, with broad recurving petals. Some of the best marked varieties are bicolor, pardinum, atro-sanguineum, and fulgens.

Other notable Lilies from Japan are *L. cordifolium*, *L. Fortunei*, *L. japonicum*, *L. medeoloides*, *L. Maximowiczii*, and *L. Leichtlini*, but of these I hope to write a few notes on another occasion.—T.

EUPATORIUM CANDOLLEI.

AMONG the many useful plants blooming during the winter months this *Eupatorium* is one of the best, considering the simple means required to have it in good condition; and the blooms being white renders them still more acceptable. It is a useful plant for house decoration, either growing or in a cut state, as it lasts a long time. It is of bushy habit, and can be bloomed in a small state. The best way I have found is early in March to take some cuttings of the side shoots which have not bloomed, insert them four or five in a 3-inch pot in a sandy soil, and plunge in bottom heat in a hotbed or propagating frame, where the cuttings soon form roots, and can be potted singly. Grow them for a time in a warm house, keeping them near to the glass; pinch out the points of the shoots to induce a bushy habit, and harden them gradually. About the end of May or early in June place them in 6 or 8-inch pots, using a compost of loam, peat, and leaf soil in about equal proportions, with a good sprinkling of bone meal and silver sand. Plunge in ashes in an open position out of doors, keep the points of the shoots pinched till the end of September, water carefully, giving liquid manure occasionally, and place in any cool house. Early in October and about Christmas they will produce a large supply of very useful flowers.—E. MOLYNEUX.

ROYAL METEOROLOGICAL SOCIETY.

THE usual monthly meeting of this Society was held on Wednesday evening, the 18th inst., at the Institution of Civil Engineers, Mr. R. H. Scott, F.R.S., President, in the chair. Messrs. H. B. Baker, M.D., S. Dixon, R. Foster, and B. O. Meek, F.L.S., were elected Fellows of the Society. The following papers were read:—

1, "How to Detect the Anomalies in the Annual Range of Temperature," by Dr. Buys Ballot, Hon. Mem. R. Met. Soc. The author shows that it is most likely that only a long-continued series of observations can give some evidence of an interruption of rise and fall, especially in latitudes where the temperature of the same day in different years may differ by 20° C., as in St. Petersburg.

2, "Cloud Observing," by D. W. Barker, F.R. Met. Soc. As there is a great deal of confusion amongst cloud observers, not only as to the particular names of clouds, but more especially with regard to their movements, the author recommends that there should be two simple divisions—viz., "stratiform" and "cumuliform." To the stratiform belong all the higher forms of cloud and a few of the lower; to the latter belong the typical cumulus cloud always seen in the lower atmosphere. From the result of numerous observations, the author's conclusion is that the actual normal action of the cirro-filum cloud is along the line of filature, and that, knowing the bearing of the V, or radiating point, the direction of its motion can be at once inferred. In all cases, the V point first formed in the point from which the cloud is coming, but it will frequently be noticed that threads first appear parallel to a certain point on the horizon, and in all sorts of positions between this and the central V point.

3, "A Suggestion for the Improvement of Radiation Thermometers," by W. F. Stanley, F.R. Met. Soc. The author suggests that the radiation thermometer should indicate the amount of heat radiated by the sun upon

a metal ball of a certain size, this being an object easy of uniform reproduction by mechanical means. For experiment he made three hollow copper balls, which were cast with ordinary filed cores, and were of different weights. These balls were turned to exact external diameter of 1.4 in., with similar necks for the insertion of thermometers. The surfaces were oxidised by heating to resemble the oxidation produced by the atmosphere. In each of these balls a similar thermometer was inserted, closing round the neck just sufficient to keep it steady by cotton thread soaked in paraffin. The three thermometers thus enclosed in the metal balls, when exposed to sunshine, and placed at 2 inches above a piece of black board, appeared to register, under similar conditions, exactly alike. The experiments for three summer months gave from 6° to 11° difference between the sun and shade.

ESPECIALLY TEAS.

SAM WELLER's advice to his old master, when sliding on the ice, was "Keep the pot a biling, sir," and that the pot should "bile" is a very necessary adjunct to the manufacture of good tea. Let us hope that by keeping the pot "biling" in the matter of Roses, "especially Teas," the framers of schedules may be fully aroused to a becoming sense of their duties, and just try, as an experiment, "Theta's" advice—give the Teas a little more encouragement, and see how it answers. I have referred to the "Rosarian's Year Book of 1884," but I scarcely gather from Mr. Gray's remarks that there were a large number of competitors in the Tea classes, though he certainly mentions the Rev. W. H. Jackson's stand as surpassing anything he himself could have exhibited, and yet meeting with the misfortune of missing the judge's verdict. This, however, does not say that there were many other exhibitors in a like case.

Any way, let us hope that the schedules of 1885 will give more encouragement to these lovely classes of our flower queen, and that "Theta," whose protest has opened this subject, may have a good chance of carrying off some of these more valuable prizes. A collection that contains some "three hundred varieties of Hybrid Perpetuals, Hybrid Teas, and Bourbons, and ninety varieties of Teas and Noisettes," assisted, as I fancy it is in this case, if I am right in my suspicions as to "Theta," by personal supervision and devotion, and no niggardly treatment in attention to the wants of the plants themselves, must always prove a very dangerous competitor, especially to some of us pigmies.

I believe that in local exhibitions if all the members made it a matter of duty to exhibit in every class that they possibly could, the boards would be better covered, and there would be less fear of some of the classes being omitted in future schedules from absence of competition. It is human nature, supposing our productions are not up to their usual average, to decline to exhibit below our usual form, if that word may be so used here; but this after all is very small, and certainly affects the prosperity of the exhibition considerably.

Doubtless, where every chance is afforded to the Tea varieties, a given plant will afford as many exhibition blooms as some of the Hybrid Perpetuals; but where climate and soil unite to make the Tea culture more difficult, I fancy the other varieties would give more good blooms than the Teas; and when I wrote that thought I had specially in my mind Charles Lefebvre and Marie Baumann, not La France, which with me is scarcely as kind as I could wish. "Theta" reminds me of La France's Tea parentage, and that parentage it shows here by preferring, in my experience, the Briar as its foster-parent. Here, again, "Theta's" remarks incidentally show how very difficult it is to compare Roses growing under different conditions of climate and soil. In mentioning several Teas as being profuse bloomers, out of five noted, one, Etoile de Lyon, gives me nothing but a profusion of buds that never develop into blooms, but either remain buds or open one or two of the outside petals that then shrivel up. It is a wondrously disappointing Rose to me—vigorous in growth, robust in constitution, beautiful foliage, and then promise without performance. I see that Mr. Gray in the "Year Book" in the article noted says of it, "I cannot remember to have seen anywhere a large bloom." I do not see any at all, only, as I say, promise. Are the conditions that suit Etoile de Lyon similar to those that suit Jules Finger? The latter, so lauded by "Theta," is as complete a failure with me as the "Star."

"Theta" fully endorses my remarks as to the lasting qualities of cut Tea Roses. That any Rose bloom should in 1884 stand the test—aye! and win at three following exhibitions, seems almost impossible; but I am quite certain that if the competition were severe it could only be by a Tea—no H.P. would prove equal to the occasion. The fact, however, is another proof of the somewhat ubiquitous powers of "Theta's" exhibiting, and shows that he is among the giants of Rose-growers.—Y. B. A. Z.

BEFORE taking up my parable on this subject I may perhaps be permitted to say that there is no more ardent admirer of this lovely class than myself. So jealous, indeed, have I been of its beauty and refinement, that I have all along been one of the most strenuous opponents at the National Rose Society's Committee of allowing the Hybrid Teas to be exhibited amongst them, and as your correspondent "Theta" observes, object even to the very highly coloured varieties being exhibited amongst them; and therefore in taking a course somewhat opposed to his and "Y. B. A. Z.'s" views as to what they consider the inadequate encouragement given to the class in the schedules of Rose societies. I think the case on their behalf is somewhat overstated.

There are two considerations which it seems to me have not sufficiently been taken into account. The first is the far greater number of varieties of the Hybrid Perpetual class than of the Teas. Thus, taking the list of exhibition varieties published by the National Rose Society, I find that

the Hybrid Perpetuals therein recommended as exhibition varieties are more than one hundred in number, and the Teas about forty. On taking again the catalogue of Mr. Prince, who must be considered, I think, as *par excellence* the champion of the Tea Rose, for by his introduction of the seedling Briar as a stock for it he has done more to popularise it than anyone, I find that he has upwards of 150 Hybrid Perpetuals in his list, and not half that number of Teas. And, moreover, in the list of the former there is not one that may not at some time be seen on a stand, while in the list of Teas there are many which are simply buttonhole Roses, such as Allen K. Richardson and others, which would never by any possibility be exhibited in a stand with which the owner hoped to win a prize; and surely it is only reasonable that the class which so largely contributes to make up the backbone of an exhibition should have the larger share of the honours, but in truth, as has been observed, it has no exclusive class. The Teas may come in and often do, but it would be easy to show seventy-two Hybrid Perpetuals, and very difficult to show, even from a large collection, more than twenty-four Teas.

But there is also another reason which I think ought to weigh in the matter. Everybody can grow Hybrid Perpetuals, but the successful growth of Teas out of doors is difficult and almost impossible in many parts of the country, except they are specially coddled and protected. It is true that we are getting what seem to be more robust forms, which may perhaps alter the case in time, but even with them the growth of Teas is in many places attended with difficulty, and consequently is not attempted except under glass, and by many growers of Hybrid Perpetuals is not attempted, the difficulty arising not from soil but from climate. Soil can, I think, generally be mastered in some form; but climate, unless by the use of glass or walls, is an element in successful growing we cannot overcome. North of the Trent it presents so many difficulties that growers who are otherwise most successful will not attempt it. I strongly last year urged my excellent friend, Mr. T. B. Hall of Larkwood, Rock Ferry, to attempt it, assuring him that I thought they would succeed on raised beds. I remember his reply was, "Well, there is my neighbour Mr. —; he has planted Teas for five years, and this is the first year he has been able to cut a decent bloom from them." I notice, too, that when my friend Mr. E. R. Whitwell exhibits so magnificently at Darlington and Liverpool there is hardly a Tea in his box. Taking these matters into consideration, I really think that growers of Teas cannot very well complain of the amount of encouragement given to them.

Nor is this altered by the list of the exhibitions. The number of entries in amateur classes in the Hybrid Perpetual classes (I know Teas are admitted in these) is always largely in excess of those in the classes for Teas, while on looking at the list of exhibitions, say at the National Rose Show at South Kensington, I can lay my hand on many collections which I know to have been grown mainly and in some cases altogether under glass, while it is significant that a prize has been offered for four years for six suburban-grown Tea Roses, and has never yet been awarded.

There is one point in connection with this I should like to add a few words upon, which has been alluded to—viz., the amounts awarded for prizes. I think all societies should be very careful over this matter. The £ s. d. side of exhibiting is somewhat perilous to the well-being of the flower we all love. Of course, it is very pleasant to win "a pot of money," but I contend that the exhibitor who looks to this mainly is no more a true lover of the Rose than the man who goes out for a day's shooting and has only regard to the "pot" is a true sportsman; it frequently leads to many "unfair shots." An exhibitor will look to see who his competitors are, and will show accordingly. I have seen exhibitors make such a calculation as this: If I show in Class X, twenty-fours, there is So-and-so, and he is sure to beat me, and I shall only get a second, worth £2; but if I show in Class Y, eighteens, I think I shall come in first, and the prize is £3, so I shall go for Class Y. Now, if the true spirit of an exhibitor had dwelt in him, he would have said, "I entered in Class X, and there I must stay." The National Rose Society has somewhat felt this, for instead of the rule being an exhibitor can only exhibit in Section A or B, it is now can only enter, so that he cannot, as I have seen over and over again, when he finds that he is not strong enough for the one, drop down on to the other, on the plea that he entered for both. But even this will not prevent an exhibitor from, we will say, finding he is not strong enough for twenty-fours going into eighteens. Nor, again, ought it to be, I think, the object of societies so much to give large prizes as to give encouragement to all classes of growers. Where a Rose Show is held as a commercial speculation the object will be to get the largest display, so as to please the public; but where a society has for its object the encouragement of the Rose, I do not think that this will be gained nearly as well by offering monster prizes as by encouraging all classes of growers. In corroboration of this opinion, I may mention that I knew two societies which offered a prize of £20 for the best seventy-twos, but it was the old story of the frog—they both "burst."

And, after all is said, I suppose that Rose societies will adopt the course which they think best suited for the interests of the *clientèle*, whether exhibitors or the public, and knowing the energy with which most of them are managed, I think the interests of the Tea Rose may safely be left in their hands.—D., Deal.

THE PINE APPLE AND ITS CULTURE.

[An essay read at a Leeds Gardeners' Meeting by Mr. Joseph Smith, gardener to T. Green, Esq., Asket Hall, Roundhay, Leeds.]

The Pine Apple is a native of tropical South America, Peru, and Brazil, and was introduced into this country about the year 1690. Some

say that it passed from Brazil to the West Indies, and thence to the East Indies, whilst others suppose, from the great abundance in which it is found growing in both the East Indies and Africa, that it is indigenous to these countries. As my object is not to settle this matter, I will turn to the culture of this noble fruit. I do not mean to give an exhaustive description of the different methods, but shall confine myself to the treatment Pine Apples receive under my own care. Before doing so, however, a question seems to force itself upon me, and that is, How is it that this very highly esteemed fruit is not more generally cultivated in this country than it is? in fact it seems as though its culture is on the decline rather than making progress. I know it resolves itself into a question of cost, which, no doubt, is a reasonable objection in country districts, where coal and other fuel is very dear, but in the vicinity of mines and towns where coal and coke can be obtained at a fair rate, I think that any moderate garden might devote one or two of its glass structures to Pine Apple growing. However well a nobleman's or gentleman's garden may be furnished with vineries, Peach houses, greenhouses, and stoves, my idea is that it is greatly improved if in addition to these it has its Pine stove. No doubt imported fruits can be bought at a lower rate than we can grow them, but the flavour is much inferior. I was speaking only a few days ago with a gentleman whom I consider a very good authority, and he said, "We like good English Pine Apples when we can get them; there is no comparison between the two." Foreign Grapes can be bought at a very cheap rate, but who would think of placing them before their guests in preference to those grown in their own vineries? Again, what is there more attracting than a house of fine, sturdy, healthy Pines? and what more interesting than to watch them in all their different stages, from the sucker to the time they show their tints of rosy crimson indicative of approaching fruit, the swelling of the fruit, and finally the golden fruit itself?

In order to grow Pine Apples to perfection it is necessary first of all

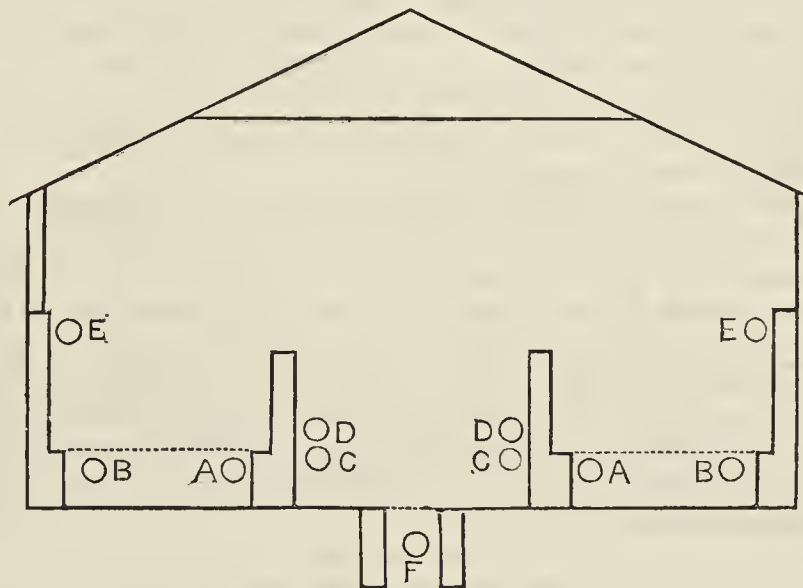


Fig. 32.—A Pine Apple pit.

to have a suitable structure set apart for them. In preference to all others I recommend a good span roof, running with its ends north and south, thus getting the full benefit of the sun, and as low as possible, leaving just sufficient head room for the development of their foliage without coming in contact with the glass, as by this means they will be prevented becoming drawn, one point particularly to be guarded against if strong plants and fruits are to be obtained. The internal arrangements may be a pit in the centre of the house, with a path all round, and about four rows of 4-inch hot-water pipes running through it equidistant, so as to equalise the bottom heat, these being in a chamber under the pits, and not in contact with the plunging material, which it will be necessary to have for the plants. The quantity of piping will be entirely regulated by the width of the pit, the number named being sufficient for one from 8 to 10 feet wide. Another method, which will do equally as well, is to have a pit on each side and a path down the centre. This is the arrangement of the house in which they are growing with me. I may say that it was not constructed for Pine Apple growing, or I should have had it slightly altered, the main fault being that the pits are too narrow for the two rows of plants which are grown in each pit. Notwithstanding this, and considering we have but one house for all, suckers, successional and fruit-bearers, it answers very well. In the section, fig. 32, A and B represent two 4-inch flow-pipes on each side in the chamber under the beds for bottom heat, C and D are two flows on each side of the path, E a flow on each side of the house just below the side ventilators, and F the return pipe for all, under the path to the boiler, thus making it equal to a flow.

We always begin the work for the season in February by taking all the plants out of the bark, tying up those which are to fruit during the season, and throwing out those that have fruited, after carefully taking off all the suckers required to carry on a succession, the strongest and best always being selected. They are then placed in the shed, where they remain until we get the bark in the pits, which is passed through a half-inch riddle, leaving the rough portion in the pits and wheeling the fine out for manure. The house is well cleaned with hot water and a little softsoap. After thoroughly washing all the woodwork, glass, and walls inside, we give the house a good syringing with strong diluted petroleum or Fir tree

oil, allowing it to dry on, whilst the house is empty, as we can then do no harm, and I think any insects must succumb to such treatment. We next fill the pits with fresh bark from the tannery, and after mixing the old and new together, we leave it until the heat rises, turning off the bottom heat, as there will be sufficient heat for a time without them.

The soil is next prepared for potting the suckers. Various kinds have been recommended, but I do not consider this so important if they receive proper attention afterwards. As I never yet saw a Pine too firmly potted, I use the following compost, with the view of securing that firmness which is so essential to strong leathery foliage, dwarf sturdy plants, and fine solid fruits. Four parts strong fibry loam, one part cow's dung, gathered from the pasture, dried in the sun, and one part wood ashes, adding to each barrowful of this mixture an 8-inch potful of finely ground bones, with a slight sprinkling of charcoal, using more charcoal when without wood ashes.

The suckers are prepared by cutting half an inch or an inch from the base, and taking off the lower leaves, so as to expose the roots, which in several will be curled up under the leaves, the others being just ready for pushing into the soil as soon as placed into suitable heat and moisture. The pot used for them is 6 inches in diameter. After carefully placing a potsherd over the hole hollow side down, this is covered to the depth of 2 inches with more potsherds, finishing with smaller pieces. Over these is placed some of the roughest compost, and a little finer on that, which is rammed well down with a blunt stick. Then place the sucker in the centre of the pot, and with a suitable stick press the soil firmly around it, taking care that the compost is neither too wet nor too dry, but in such a condition that the stick will work freely and not be clogged. As the work proceeds they are taken into the stove ready for plunging. Those intended to fruit are also examined, and if any require top-dressing they receive a little of the same compost as the suckers. They are then plunged in the pits, those that are to fruit being on one side of the path and the suckers on the other, so that the bottom heat can be regulated to suit both. Those in the autumn and winter that are swelling and ripening their fruit requiring a higher bottom heat than the suckers of the previous spring. The distance the plants are placed apart in the pits are 18 inches between the rows, the pits allowing no more, and 2 feet 3 inches from plant to plant for those that are established for fruit-bearing, whilst the suckers are placed so that they stand clear of each other until they become rooted and ready for a shift.

Those intended to fruit and suckers are started in a bottom heat of 90°, this being a suitable heat for assisting the former to throw up their fruits, and the other to emit their roots quickly. Sometimes the heat of the bark rises much higher, but there is no need to be alarmed. If it should become too high the best thing is to loosen the pots in the bark so that there is a space all round to let the heat escape. One spring it rose to 130° with me, and I felt very uneasy about the result, but those plants subjected to such an extreme heat produced the same summer the finest fruits I have had, the only discernible effect being that they were slightly drawn in the stem, with a few blotches on some of the leaves near to the stem very similar to a scald. As the heat of the bark declines the heat under the pits must be turned on, and the evaporating troughs should be kept filled with water.

(To be continued.)

FEBRUARY FLOWERS.

SNOWDROPS, Crocuses, Violets, Primroses! Are there any flowers more generally appreciated? Does even summer with its Roses give us as much real heart-stirring pleasure as early spring with its lowly blossoms, the first to rise from winter's sleep out of the cold brown earth? The garden now is just charmingly invigorating; often gayer, but never more attractive; often more gaudy, cloying with the fulness of its treasures, but now in every flower I read eager expectation, hope, promise, youthful energy, stored-up energy which by-and-by will work wonder.

Thrushes and blackbirds ring out their clear wild songs. The fresh crisp wind makes the white helmets of the Snowdrops nod; and what an army of these white-helmeted soldiers have risen up this year! I suppose their sleep was sounder than usual owing to the hot dry summer; anyhow they stand in serried ranks a countless host. Crocuses are staring with wide-opened eyes at the sun. And the Violets. Oh, the Violets! what a delicious whiff came up with that last breeze! Mr. Editor, I must send you a few of our Devonshire Violets. Like the Snowdrops they are positively brimming over with luxuriance this spring, delicious, ravishing! May our hopes be fulfilled.—R. W. BEACHEY.

[The flowers sent are among the finest we have ever seen, the varieties are Comte de Brazza, double white, large, pure and sweet; White Czar, pure, but less fragrant; Czar, single, well known; Victoria Regina, twice as large as the Czar and twice as sweet; De Parme, a large, dark, and highly perfumed form of the Neapolitan; and New York, still darker, more massive, and powerfully scented.]

DEUTZIA GRACILIS IN SMALL POTS.

THE above well-known shrub is invaluable for early forcing. No one, where early cut flowers are in demand, should fail to have a few plants. It is so easily grown and forced into flower that no one need despair of success. Moreover, it is one of those accommodating plants that may be had in flower at the cultivator's will, and amply repays any little trouble he may bestow upon it, producing as it does such a profusion of lovely white flowers, and at a season when they are highly prized.

The usual way of propagation is by cuttings. These, made of the young growths and inserted any time during the next two months, will, with due attention as regards watering, potting, &c., make good plants during the coming season. But for forcing two-year-old plants are to be preferred. We have here a few such plants in 5-inch pots in flower now (February 21st), and very useful they are in this size pot. The first year's growths of these plants I may say were removed last April, the current year's growths alone being retained, and on these shoots, which average 15 inches in length and ten to a plant, their beautiful racemes of flowers are freely produced. They may, however, be grown to almost any size and in any form the cultivator wishes; but grown as here indicated and in the size of pot mentioned, they are in my opinion far more serviceable in every way.

Many other plants, too, might be grown in smaller pots than they are usually seen growing in, and with the best results, by judicious treatment in the way of applying top-dressings and stimulants when necessary.—J. RICHARDSON, *Calverton Hall, Notts.*



HARDY FRUIT GARDEN.

PRUNING, planting, training, and dressings for insects should all be finished ere now, and it only remains for us to remind our readers of the importance of seeing that all necessary attention has been or is promptly given to the roots before growth begins. For trees suffering from canker we have given proof that lifting clean out of the soil and replanting in fresh, sweet, fertile soil is a good remedy, so good that trees badly affected by canker recover fully and become healthy, flourishing, fruitful trees. Do not, then, lightly destroy cankered trees, but rather transplant. There are few fruit gardens where root-pruning, lifting, or transplanting might not advantageously be done to some of the trees every winter. It is by such careful timely attention to faults or failings early before much harm has been done that the trees are kept both healthy and fruitful, and annual attention renders such work trifling in comparison to what it must be if only done occasionally after the lapse of three or four years. Trees showing signs of incipient debility should be assisted by having a heavy dressing of old decayed manure dug in about the roots, and if subsequently, when a free vigorous root-action is by this treatment again established near the surface, we may assist it by surface dressings of manure. Remember that this applies strictly to old or exhausted trees. Young trees in full vigour do not require such rich food, for if it is given them the result but too often is a rank growth of useless wood. Every garden should have two compost heaps for the fruit trees—one ready for use, and the other in course of preparation. Weeds, sweepings, road trimmings, waste soil from potting sheds, vegetable refuse, leaves, coal ashes, stable manure, wood ashes, and lime are the component parts of the heap, which grows in a year to a considerable size, and is after a few turnings sweet, mellow, and so fertile that it is difficult to confine its use solely to the fruit trees. We call attention to it now in order that those who have not hitherto been accustomed to prepare such a valuable gardener's assistant should at once begin doing so. Many a man while indulging in vain longings for sweet, fertile, fibrous loam might do better by making such an excellent substitute for it as we consider our compost to be.

Have we done all that is possible by planting to improve the shelter of our fruit gardens? If not, let this important matter be seen to before it grows too late for planting. Thick wide belts to guard the exterior of our orchards from high winds and biting north-easters, and intersecting hedges of Thuja Lobbi for the interior. We cannot too often call attention to this important matter, for shelter or no shelter but too frequently means fruit or no fruit. The blossom of Plums and Cherries suffers most from exposure to the north-east winds, which blow upon it with deadly effect nine springs out of ten. Pears come next in a certain degree of hardness, and Apples last; but all fruit trees require that shelter which it is in the power of most gardeners to afford them—the protection of a thick screen of evergreen trees of quick growth and dense habit such as we have in the Norway Spruce, Scotch Fir, Austrian Pine, and best of all, where it will answer, Pinus insignis. They should be at least four deep—twice four would be better if space can be spared, and have plenty of Larches among them for the first few years as nurses, taking care to remove them gradually as the permanent trees require space. We ask the especial attention to this matter of all who have or are planting new orchards. Plant against the cross winds, first of all from the north-east, and as of secondary importance against the south-west winds, which occasionally do much harm in battering tender blossom and foliage to pieces, and in blowing off the immature fruit.

FRUIT FORCING.

VINES.—*Earliest House.*—The thinning must be completed now, and as no rule can be laid down for this operation those in charge and acquainted with the capabilities of the Vines should be guided by their own judgment. One essential, however, may be noted—viz., that in a properly thinned bunch of Grapes there should be a sufficient number of perfect berries to keep it in shape when cut and laid upon the dish, and

with sufficient space for every berry to swell to its full size without becoming wedged. Allow a fair extension of the laterals above the bunches, keeping those below them somewhat closely pinched, so as to allow the buds at the base of the growth to become perfectly formed through their corresponding leaves having free access to light and air; indeed, no more foliage should be allowed than can have exposure to light, and under no consideration must it be allowed to interfere with the principal foliage. Give a thorough soaking of tepid liquid manure to inside borders, and mulch with a couple of inches thickness of short manure, supplying water frequently. Damp the house well at closing time, which should be early, allowing a rise after closing to 85° or 90°, observing 80° to 85° for closing, and commence ventilating from 70°, increasing with the solar heat, and keeping it through the day at 80° to 85° with bright sun, and 70° to 75° by artificial means in the daytime, the temperature being allowed to fall to 65° or even 60° on cold nights.

Replanting Vines in Early Houses.—Where replanting has been decided upon no time should be lost in securing a stock of cut-back canes where a good propagating pit is at command. Eyes inserted now will be fit for planting in May, with every prospect of their filling the house with clean healthy rods this season. We consider, however, that cut-backs are preferable, though there is no objection to eyes started and grown in turves preparatory to planting. The border for early Vines should be inside, not more than 4 feet wide to begin with and 30 inches deep, resting on good clean drainage, with drains to carry off the superfluous water. Good turf—light rather than stiff—ten bushels, old mortar rubbish one bushel, charcoal one, and crushed bones half bushel; the whole being thoroughly incorporated will form a lasting border. Supernumeraries may be introduced for fruiting next season, whilst the permanent Vines are making a stout growth for future bearing.

Second House.—When the Vines are in flower they should not have a lower temperature than 60° to 65° at night, with a rise of 10° to 15° by day. Syringing must be discontinued, but avoid an arid condition of the atmosphere by damping occasionally, seeking to prevent the condensation of moisture by a gentle circulation of air, being careful to avoid a draught. All shy-setting varieties must be carefully fertilised, and even Hamburgs repay the trouble by the certainty of thereby obtaining evenly formed berries. The temperature for Muscats in bloom may range 5° to 10° higher than the temperature indicated for other varieties, and a better set will be obtained by removing the surplus bunches before they come into flower.

Succession Houses.—Syringe the Vines started early in the month two or three times a day, and when those that have been lowered from the trellis to induce them to break evenly have done so, secure them in position. Commence disbudding by removing the least promising breaks, but defer the final disbudding until the best bunches can be determined upon. If water is needed afford it in a tepid state, and if the Vines are weak from heavy cropping employ tepid liquid manure. The temperature when the Vines are coming into leaf may range from 55° to 60° at night, 60° to 65° in the daytime artificially, and 10° to 15° advance from sun heat, observing 65° as the point for admitting a little air, and closing for the day at 75°.

Midseason Houses.—The houses of midseason thin-skinned varieties may be closed early next month, the canes in the case of young Vines being depressed at the upper part to insure their breaking with regularity to the base. Syringe the rods two or three times a day, but allow them to become fairly dry before night. Fire heat only need be used to keep the temperature at 55°, and prevent its falling below 50° at night. Allow an advance of 10°, or to 65° from sun heat, and close the house at that degree.

Late Houses of Hamburgs.—Keep these as cool as possible, excluding frost only, and observe the same with other thin-skinned varieties of a similar nature not wanted ripe before September or early autumn. They will start naturally in April, and can be advanced sufficiently by husbanding the sun heat so as to ripen them at the time required with very little assistance from fire heat.

Late Grapes.—These require a long season of growth, and late Vines should be started without farther delay. Examine Grapes in the fruit-room frequently for decayed berries, keeping the bottles filled with water as necessary, and expel damp by gentle fires and ventilation in the day; otherwise keep as equable a temperature as possible, the nearer to 45° the better.

Preparing for Planting Vines.—In all cases it is advisable to arrange for borders inside and outside, and the Vines should have the run only of the inside border until they fill it with roots, then they may be allowed to pass into the outside border. The best time to plant it is undoubtedly early in April, as the Vines then naturally start into growth; but all should be in readiness. If cut-backs have to be planted they should, if not already done, be cut back to a couple of eyes at once and dressed with styptic or patent knotting, and kept cool until they have started and made a couple of inches of growth, when they should be turned out of the pots, have the roots disentangled, spread evenly, and be supplied with water at a temperature of 90° to settle the soil about the roots. If the borders are ready, the Vines being cut back some time previously, they may be turned out at once—i.e., before they have started, and they may be accelerated in growth by a temperature of 50° to 55°.

Vines Intended for Early Fruiting in Pots.—These will now or ought to be fit for shifting into the fruiting pots. The pots should be 12 inches in diameter, clean, well crocked, and the compost good rough turfy loam, a little old lime rubbish, and a sprinkling of crushed bones, potting firmly, and half plunge in a bottom heat of 80° to insure speedy root-action, keep close, and shade from bright sun for a few days, after which

expose them fully and train near the glass, so as to insure short-jointed thoroughly solidified growth.

PLANT HOUSES.

Zonal Pelargoniums.—Young plants that have been wintered in 3-inch pots on a shelf near to the glass in a night temperature of 45° may now be placed into pots 2 and 3 inches larger. The soil should be pressed firmly into the pots to insure a sturdy growth; the compost should consist of fibry loam, one-seventh of decayed manure, and sand. After potting supply water carefully and place the plants in a temperature of 50° to 55°, the latter being sufficiently high during the day. They should be arranged near to the glass until they are rooting freely, when ventilation should be given on all favourable occasions. Under this treatment the plants will soon commence vigorous growth, and in a short time will produce their large trusses of brilliant flowers which will be found invaluable for conservatory decoration. Double varieties grown principally for supplying flowers for cutting, and which have been wintered in small pots in a similar manner, may be placed in the same sized pots as advised above. These, when established, may be pinched again and brought forward under cool conditions. This, however, depends entirely upon the time the plants are wanted in flower. If wanted early give them the treatment advised above. The stock of these plants may now be increased by cuttings, which root freely on a shelf near to the glass in a temperature of 60°. The cuttings should be inserted singly in sandy soil in thumb pots.

French and Fancy Pelargoniums.—The earliest plants potted some time ago and now thoroughly established should have commenced active growth. The plants must be arranged near to the glass in the temperature indicated for Zonal varieties. The shoots may be tied out, but not stopped again if wanted in flower as early as possible. Water carefully until the plants show signs of flowering, when a little stimulant may be given, clear soot water being very good for these plants; it acts quickly, and imparts to the foliage a fine dark appearance. Pinch the shoots of successional batches when 3 or 4 inches in length, and strike a batch of cuttings in heat for late flowering.

Petunias.—Double varieties that have been wintered in 3-inch pots near to the glass should now be bushy little specimens with their pots full of active roots. These will be useful in 5-inch pots for decoration, and will be early if allowed to come forward into flower, again pinching their shoots. Use a similar compost to that recommended for Pelargoniums, which, if pressed firmly into the pots, insures sturdy specimens. If leaf mould be employed they are liable to grow soft and tall. They will come forward rapidly after potting if subjected to the same treatment as the Pelargoniums. Heliotropes in small pots should be repotted and given similar treatment. A batch of cuttings of both the former and the latter can be inserted and placed in the propagating frame until rooted, and then grown on for succession.

Fuchsias.—Plants that have been rested should now be pruned, watered at their roots, and started into growth in a temperature of 45° to 50°, a vinery or Peach house being a good place for them. Very little water will be needed at the roots if the plants are syringed over the foliage twice daily. Young plants from cuttings rooted in autumn and established in small pots may now be placed in 5-inch pots, a very suitable size in which to flower them in a small state, and placed in a temperature of about 50°. Supply the plants with a small upright stake, and use for a compost good loam, one-third of old Mushroom-bed refuse, and sand.

Solanums.—Plants that are past their best and are required again in early autumn, should now be pruned and started into growth in a similar temperature to the Fuchsias. When they have commenced growth turn them out of their pots, reduce the roots one-half, and repot in the same size pots in a mixture of fibry loam, one-seventh of manure, and sand. When rooting freely in the new soil grow the plants for a time under cool greenhouse treatment until they can be placed in cold frames. A good batch of cuttings may be inserted in sandy soil, and will root freely in the close propagating frame. From cuttings inserted at once and grown on without a check, good berried plants by autumn may be produced.

Chrysanthemums.—Cuttings of these useful plants should now be inserted, whether required for large blooms or for purposes of decoration. Select strong sturdy cuttings and insert them singly in small pots, as nearly every one will root, and the plants are not checked afterwards in the operation of potting. These cuttings should be struck if possible where a slight bottom heat can be given and the tops kept moderately cool. If rooted in a moist close atmosphere the tops commence growth before roots are formed; but, on the other hand, roots are first formed, and a stout sturdy growth follows.

THE FLOWER GARDEN AND PLEASURE GROUND.

Climbing Roses.—Under good treatment there are no more serviceable plants than these. With us they are the first to yield good blooms for cutting, and the Teas especially continue to flower more or less till very severe frosts damage them in the early winter months. It is the comparatively young and vigorous growing plants that are much the most profitable; but instead of these we more often see miserable half-starved plants that are both unsightly and useless. These should be at once removed and their places filled with strong plants of such sorts as Gloire de Dijon, Climbing Devoniensis, Safrano, Maréchal Niel, Madame Berard, Homer, Alba Rosea, Souvenir d'un Ami, Rubens, and Madame Lambard, all being either Teas or Noisettes, and Cheshunt Hybrid may well be included. Give the preference at this late date to plants in pots to any that may be lifted from the open ground. As the positions in which these Roses are planted are usually the hottest and driest in the garden—viz.,

at the foot of sunny walls and the fronts of dwelling houses, extra pains should be taken in preparing the ground for them. All loose exhausted soil should be removed and good loamy soil supplied, to which has been added a liberal quantity of manure. A depth of not less than 2 feet of good soil ought to be provided, and the roots of the plants should have the soil well rammed about them. As the plants will experience little or no check they may be pruned at once—the weakly shoots to a single joint and the stronger to three or more joints. If pruning is neglected the plants may perhaps flower at once; but it would be better to encourage a strong growth, and which, in many cases, would also be a flowering growth. Strong, well-established plants that are worth retaining should have the surface soil removed, so as to bare many of the roots and receive a liberal dressing of loam and manure in equal quantities, the latter being best procured from the pig yard. A little of the old soil may be placed on the surface, both to prevent offensive smells and to preserve a neat appearance.

Pruning Climbing Roses.—In most localities this may now be safely commenced. They must not be neglected any more than the dwarfs or standards, or they soon become weakly and produce few or no really presentable blooms. All the Teas should be freely cut back to the main branches, leaving one joint on the weakest shoots, and three or more where they are strong—say, near the size of a pencil. Where the space is not yet all occupied strong leading branches may be neatly nailed in, only the unripened portion being cut away. Gloire de Dijon, when thus freely pruned, rarely fails to bloom well, and also forms extra strong branches earlier in consequence; these will produce fine flowers in the autumn. Maréchal Niel requires rather different treatment, as this blooms principally on the long well-ripened lengths of the previous season's growth. Some of these, then, should be laid in to their full length, while if a few are cut freely back several fine shoots will result, which should be carefully laid in for the next season's display. It is the neglect of this precaution that is the cause of so many plants soon becoming exhausted and useless. Hybrid Perpetuals, as a rule, are of but little service against houses, especially if allowed to grow and flower at random. Unless extra strong they should be pruned back nearly as freely as the Teas. Banksians should not be so hard pruned, as the very strongest shoots if shortened will only produce still stronger and flowerless growths. It is better to lay in a few of the strongest shoots, shortening all those of a medium size and thinning out the spray.

Pruning Evergreens.—This also is now being attended to. Laurels that are formed into banks require to be neatly cut, using either a knife or secateurs in preference to the more expeditious but more mutilating shears. Any Laurels that are too tall or of a straggling habit, if sawn neatly off near the ground, will push out a quantity of strong shoots, and if these each spring are shortened somewhat neat and more handsome specimens will be the result. Laurustinuses may also be similarly improved, and we have frequently cut down large Yews and Portugal Laurels with successful results. Crowded mixed shrubberies, unless thinned either by transplanting or the cutting away of the commoner sorts, soon lose much of their beauty. Conifers especially should not be pressed against by other trees or shrubs, and the latter should be cut away from them. Even the Conifers are sometimes improved in appearance by judicious pruning. All the deciduous flowering shrubs will bear being freely shortened back, and in some cases will be much benefited thereby; while no one need hesitate to cut back all straggling shoots of Box, Hollies, Escallonias, Aucubas, Euonymuses, Acacias, Genistas, Sweet Bay, Hydrangeas, Weigelas, Berberries, &c.

THE BEE-KEEPER.

SEASONABLE NOTES ON BEES.

SINCE we wrote our last letter there have been two or three bright genial days, and the bees have taken long flights. These were opportunities for cleaning floorboards and doctoring hives which showed signs of dysentery. All our hives seemed very strong, and breeding is evidently going on apace. The few flowers which are in bloom were continually visited, and much water was carried home. We generally have these unexpected bright warm days in February, and they are apt to make novices at bee-keeping at once begin to disturb their bees by feeding and other premature attentions. All disturbance should be carefully guarded against, at least until the end of this month. Even then, unless there be a continuance of finer weather, the stocks are by far best let alone. We have often in this Journal warned those who have bees against beginning to stimulate their queens to breed too early in the year. There is nothing gained by having a lot of brood hatched out in the cold spring weather; often the effect is the reverse of gain, the sure cause of dwindling.

There are many things to be attended to now. All preparations for the summer work should be carefully made. Surplus hives should be ordered at once, or where made at home be all finished before the press of work comes on as the bees are awakened to activity. Supers, of whatever kind employed, now should be obtained and fitted out with strips of foundation. This should be of the thinnest manufacture, and even of that we never employ much in supers. A strip an

inch broad is amply sufficient. We have tasted super honey and had the disagreeable experience of a cake of hard wax between the teeth. If thin foundation be employed the bees appear to be in such a hurry to get on with their work, once they enter a super, that they do not pare down the thick midrib, but build out the walls upon it. There is no doubt that 1 lb. sections are those most easily disposed of. There may be a ready market in some parts of the United Kingdom for large slabs of honey or for large supers, but such is not the case in our large towns of the south of England. There 1 lb. sections are most sought after, and after them the 2-lb. sections. We are glad to see the Committee of the British Bee-keepers' Association has not yet decided on any particular section as a standard; if they do so we hope that it may be of such measurements that a certain number will fit well into the standard frame. Bee-keepers should order sections at once.

It is false economy to be niggard in the use of foundation; sufficient should be purchased to use it liberally. If swarms cannot be hived on frames of comb already constructed, then full sheets of foundation should be employed. Combs that have been exposed during the winter, and hives and supers previously used, must be fumigated to destroy moths and other insects. Water should be placed near the hives, and as the bees become active the ventilation through the hives may be partly checked to induce a moister temperature. Boards may be placed over the quilts; a certain amount of condensation in the hive as the season and breeding progress will be beneficial. While the bees were kept for weeks in their hives by wintry weather, this condensation was fatal to their well-being. As they fly more and more frequently abroad, and as they require water for the brood, it will be beneficial.

Look out for birds which feast on bees—we have found them more destructive during the spring months than in the dead of winter. The tom-tit is a voracious destroyer of fatigued or partly chilled bees. If you watch bees in their first spring flights you will see that they do not go far afield, and that they often settle against the sides or on the roof of the hive or on the wet ground and pathway to collect the water. Birds and toads then make the best of their chances and destroy many. Later on the sparrows are the great enemies; a pair of these birds near an apiary will rear their young almost exclusively on bees. It is not the drones only they attack, we have seen them take bees continuously before drones are flying. They will catch them as they alight heavy with pollen, dart over a hedge for a minute, then rise again with the bee and fly off to their nest. Having watched these manoeuvres on the part of a pair of sparrows for some time we walked round to the other side of the hedge, a big stone was found covered with the stings and other parts of bees. Just as the thrush or blackbird beats out the snail from its shell, so these sparrows had prepared the dainty morsel for their progeny.

We have just recommended water to be placed near hives, and we should at the same time warn those who have not seen the evil consequence of having their apiary near a large sheet of water—such as pond or river. In windy weather bees are destroyed wholesale in such places. If no properly arranged supply be near they go to the pond and are blown in and drowned. The best plan of giving water will be used by the bee-keeper according to circumstances. We once had a large rain-water butt near our bees, and by letting the water drip very gently from the tap down a long piece of canvas we gave a much-appreciated water supply to our bees. Another arrangement equally successful was a big pan with some bricks and some stout wood shavings in it—anything that will absorb the water and allow the bees to draw it out without actually going into the water will answer. Some use tea leaves in pans and keep them constantly moist. Presently when we commence stimulative feeding with thin syrup less water will be required, and the bees will not so eagerly seek it.

Planting for bees should still be carried on. We mentioned several plants and shrubs in our last letter which bees delight in; to that list should be added the Raspberry and the American Blackberries among fruits, and the Veronicas and the indispensable Borage and Mignonette among flowering plants. Both these latter may be sown in April and will give honey during the summer and autumn; where there is a shrubbery they may be sown broadcast and raked in. If the Borage once establishes itself there will be no trouble about abundance of plants in future seasons.—P. H. P.

THE BRITISH BEE-KEEPERS' ASSOCIATION.

I AM glad to see that "A Hallamshire Bee-keeper" admits that large quantities of honey were on sale in the bee department established at the Health Exhibition by the British Bee-keepers' Association. This is a step at any rate in advance, for now we are agreed that something in any case has been done by the Association to promote the sale of honey. He proceeds, however, to ask me, "Whose honey was it that was sold?" To this I reply, that I neither know nor care. It was not mine, and if the persons whose property it was made a profit on the sale, so much the

better. I believe I am correct in saying that more than fifty exhibitors sent their honey for sale to the bee department of the exhibition in question. The fabulous story about some clergyman making £4853 by his honey might be believed in Hallamshire, certainly in no other shire throughout the British Isles.

"A Hallamshire Bee-keeper" contrasts the Grantham honey fair with the efforts of the British Bee-keepers' Association in the same direction. But who, let me ask, established the Grantham fair? The credit belongs to Mr. Godfrey, the excellent and energetic Secretary of the Lincolnshire Association. Mr. Godfrey for some time was a member of the Committee of the British Bee-keepers' Association, and would have continued on the Committee had not his home been too far away to allow of his regular attendance in London. The Lincolnshire Association is a direct offshoot of the British Bee-keepers' Association, an affiliated Association, a daughter of whom the foster-mother may indeed be proud. The British Bee-keepers' Association, then, is distinctly entitled to some portion, at all events, of the credit of those "honey fairs" so dear to the heart of "A Hallamshire Bee-keeper." And tons of honey have this year been offered for sale, and a vast amount has been sold at honey fairs in countless shows throughout the land, directly and distinctly through the influence and example of the British Bee-keepers' Association.

"A Hallamshire Bee-keeper" says that the Honey Company is "to be a money-making one." I trust it may be, why should it not be? It is started as a commercial speculation, in the hope that the capital subscribed may be of service to the shareholders, and also benefit the producers of honey. Gentlemen of good position and of public spirit have established the Company for good and useful purposes, and I submit that their work is worthy of every encouragement from those interested in the progress of apiculture and the welfare of the community.

The numerous extracts from the *Bee Journal* and the references thereto cannot disprove the fact that the British Bee-keepers' Association has not adopted any standard section. "A Hallamshire Bee-keeper" seems anxious to prove that the Association ought to have made so grave a mistake as to adopt or recommend a standard section, but possibly it has not. At the recent annual meeting the Association unanimously declined to accept any standard section, but I am sure that if "A Hallamshire Bee-keeper" has any suggestions to make, those suggestions will receive every consideration from the Committee of the British Bee-keepers' Association.

Your correspondent concludes his attack on the British Bee-keepers' Association by asserting "that neither the Committee nor even the Association represents bee-keepers, nor one-tenth of them." This assertion must of course be taken for what it is worth; its worthlessness, however, is evidenced by the fact that the British Bee-keepers' Association with its affiliated Associations, has a constituency of bee-keepers approaching, if not exceeding, ten thousand in number. This is a fact of which Mr. Peel and the Committee of the British Bee-keepers' Association may indeed be proud.—A. B. M.

[A letter received late from "A Hallamshire Bee-keeper" must stand over till next week.]

STRAW SKEPS v. FRAME HIVES—WHICH ARE THE BEST?

LOOKING at the question from my own point of view, I must advocate the former, including killing the bees to obtain their honey. I have for some years past always driven the bees from my straw hives and lifted the frames from my bar-framers, but my spare time becoming much more occupied, I had either to give up my bees or keep them on the simplest possible plan, which I contend is the old-fashioned one, that I have adopted.

Kept in this way there is little to do but to hive the swarms and take the honey, which may very often be sold in the hive as it is. It appears inconsistent to me when I hear people, who continually eat the flesh of animals as food, say that it is cruel to kill bees to obtain their honey, for I think it is the more humane method of the two, for the bees are killed outright in a few moments, whereas, on the other plan, they are continually being tortured by having smoke driven among them, and on each occasion I should judge they suffer more than they do when they are "brimstoned." It always used to be against my feelings to smoke my bees. It is a pity that animals when killed do not have their lives taken from them as painlessly as bees do when held over the brimstone pot.

I would also advocate the old style of keeping bees for cottagers, for as a rule their garden, pigs, &c., take up most of their time, and I find it pays much better; for even if we lose a stock occasionally in the winter through not feeding, yet almost all obtained is profit, which is not always the case on the other plan.—W. KRUSE.

THE BRITISH HONEY COMPANY.

I AM glad to see that the different letters on the above subject have provoked replies and roused bee-keepers to look to their own interests. I am sorry, however, that in my article, page 140, two slight errors and one omission occurs, which latter, according to "A. B. M.," was a "delicious muddle," but to him a delicious morsel, which alleviated the pain of the sting he says was so blunt. Let me here, then, correct my errors and explain the omission. Read then, "The members of the British Bee-keepers' Association have said so much against foreign honey being so much inferior to the British honey that the only reason I can see for them (the Honey Company)," &c. The three last words added in paren-

theses will make my meaning plain. One error not challenged is in my second paragraph, sixth line from the top. Instead of "property" "organ" should have been inserted. The next in the first paragraph is so trifling that it may be regarded as a straw eluted by the drowning man; but it has drawn out a little more information how things are managed, and how the "department was established at great cost." We were told that this great cost was for the benefit of bee-keepers getting their honey sold. He says, "Bills must be printed, salesmen must be engaged, tents must be pitched, or rooms must be hired," the very things that will either raise the price of honey to the consumer or considerably lower it to the bee-keeper, whether sold by a company or not. This I wish to see avoided. Regarding the standard section, it appears that our timely letters had prevented the British Bee-keepers' Association committing the mistake of fixing a standard. The statement that "the Association in compliance with requests from all quarters adopted a standard frame for the 'bar-frame hive' to the complete satisfaction of bee-keepers throughout the length and breadth of the land" therefore falls to the ground. So instead of "A Hallamshire Bee-keeper" being my unfortunate friend it is "A. B. M." that is so.

I was not aware that the British Bee-keepers' Association was a national institution as "Pro Bono Publico" says, but we live to learn. Regarding your other correspondent, Mr. Herbert R. Peel, I scarcely expected such aspersions from so distinguished a gentleman. I repudiate the charge by Mr. Peel where he says "His ignorance of the matters on which he writes is most palpable." I beg to inform him, just as he desires to inform me, that I do not write on things that I am ignorant of. I have a good knowledge of apiculture, and none but interested persons have ever said otherwise, although one of the members made a good attempt lately to lower my reputation with an editor through a letter, which fell into my hands, and so enlightened me as to who were my friends. The Editor of this Journal has favoured Mr. Peel by inserting his reply, an act of courtesy or justice that was denied me in his. I do not know who my friends are that Mr. Peel alludes to, but may tell him that my friends are his friends. I must observe that Mr. Peel is proprietor of the *British Bee Journal*, Chairman and one of the Directors of the Honey Company, and late Honorary Secretary and still a member of the British Bee-keepers' Association, and that the majority of the Directors of the Honey Company are also leading members of the British Bee-keepers' Association, who have experts going about the country advising bee-keepers to support the *British Bee Journal*. I do not know what the majority of bee-keepers think, but all I speak to as well as myself are of the opinion that the three are so closely allied and interested in the welfare of one another that we cannot see that the *Bee Journal* is entirely "free from trade interests or bias of any kind." Mr. Peel makes two unwarrantable accusations against me—viz, "I was not the originator of the Honey Company as 'A Lanarkshire Bee-keeper' asserts." I never said such a thing, neither did I say that there was "a conspiracy between the British Bee-keepers' Association, the British Honey Company, and the *Bee Journal* to introduce American honey into England by means of a standard section." As we are all liable to err I will regard these utterances as accidental. The main question at issue remains unanswered of showing how they mean to aid the bee-keeper by maintaining a fair price for his honey and give the consumer an advantage at the same time. Your Wimbledon correspondent, who is one of the Directors, points only to the profits to the Company.—A LANARKSHIRE BEE-KEEPER.

TRADE CATALOGUES RECEIVED.

Vicars, Collyer & Co., Central Hall, Leicester.—*Floral Gems, Annuals Biennials, Perennials, Grasses, Aquatics, and Cactæ.*

Waite, Nash, Huggins, & Co., 79, Southwark Street, London, S.E.—*Wholesale Price Current of Agricultural Seeds for 1885.*

John Forbes, Hawick, N.B.—*Catalogue of Florists' Flowers.*

R. J. Kane, Kells, Meath.—*Catalogue of Vegetable and Flower Seeds.*

H. Elliott, Springfield, St. Heliers, Jersey.—*List of Jersey Chrysanthemums.*

Alban Goodman & Son, The Deamond, Londonderry.—*Catalogue of Vegetable and Flower Seeds.*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles in-

tended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Seedling Holly (W. P.).—The variety you sent is distinct in its leaves, being flatter with less formidable spines than the ordinary form; but we cannot see that it possesses any character to render it of especial value. There are now numbers of very handsomely variegated Hollies which are much superior to the common green varieties, though the broad-leaved forms of these are ornamental.

Testing Seeds (F. J.).—There is no plan so good as counting some of each and sowing in pots of soil kept moist in a heated frame, greenhouse, or other warm position, noting the number that germinate strongly. If the germination is weak the seeds will not be reliable for sowing in the open ground.

Pruning Vines (Idem).—If you wish to prune the rods on the short-spur system, leave a length of 5 feet of the strong ones and prune the shorter as we advised last week; or, if you prefer, you may let the strong rods bear their full length, cutting the alternate weaker canes down to good buds near the base of the rafters, and they should mature fine canes this year for bearing heavily in 1886, the rods you bear heavily this year being cut down in winter for forming strong canes for fruiting in 1887. This is the long-rod system. On the other method, which is the one usually adopted, the whole of the Vines bear every year when furnished with spurs.

Auricula Frame (C. B.).—At this period of the year and onwards the frame should have a sheltered position with a southerly aspect, as after growth commences it is liable to injury by frost. When the flowers commence expanding the frame may with advantage face the north, as they then remain fresh the longer. In the summer the position cannot well be too cool, the north side of a building being suitable, and a free circulation of air indispensable.

Shading for Greenhouse (Constant Reader).—The following mixture is employed for the purpose named in one of the largest plant-growing establishments in the country, and where the rain water from the tanks is used for the occupants of the houses:—Ingredients: 1 lb. of wheat flour, half a pound of whiting, and 1 lb. of common candle or Russian tallow. Make the flour into a paste and then put in the candles while the paste is hot, crush the whiting into a powder, mix with cold water, and then add to the paste, also adding as much Brunswick green as you need. When required for use warm it in a pail and paint the glass when the sun is shining upon it.

Auriculas (Clifton).—Auriculas when growing and showing their flowers are liable to injury by frost, therefore should be placed where they can have a little protection when needed, but a very light position is essential for keeping them sturdy. We should not pick off the first flower trusses. Alpines will do very well on outside window sills, but the Show varieties need the protection of glass, and should be arranged as close to it as possible. A shelf in your conservatory will probably do very well.

Planting Larch (J. E.).—There is no doubt but that Larch is the most profitable timber, and as the ground does not appear suitable for the growth of hard wood we should certainly plant it with Larch again. For the sake of appearance, if that is an object, you may intersperse the Larch with a few Scotch Firs, or about a sixth. As the situation is exposed we should plant thick, or about a yard apart, which will require 4840 trees per acre, and certainly not more distantly than 4 feet, which will take 2722 to plant an acre. The young trees would be best 12 to 18 inches, and they should be planted without further delay; November to March in mild weather is a proper time to plant. We have planted many thousands in March, but all depends upon the season, it not being advisable to plant after the buds are swelling, and it is important that the roots be kept damp when out of the ground.

Forming a Cricket Field (W.).—To form a cricket ground in a somewhat rough field you will need to level the ground, and not only that, but have the soil moved to an even depth, so as to secure a regular growth of the grass. It should be brought to a good tilth and thoroughly cleansed of weeds, and may be sown early in April with a mixture of grass seeds, which may be procured of any respectable seedsman, stating the nature of the soil, so as to insure a suitable mixture. Rake lightly in and roll. If you wish a good sward, one fit to play on this season, it should be laid with turf; but a fair turf may be had by sowing thickly not less than 60 lbs. per acre, keeping the ground well rolled and not mown too closely.

Zonal Pelargoniums (N. O.).—Few plants are more easily raised from seed than these, but the majority will not be equal to existing named varieties. Sow early in March in shallow pans of light soil through which the feather-like appearance of each seed may protrude. If the seed is good it will quickly germinate, and should then be removed from the hotbed and be placed upon a shelf in the greenhouse near to the glass. Water very moderately, or the plants will be apt to damp off. As soon as the seedlings have made their second leaf place them singly into 2-inch pots, in a compost of loam and leaf mould in equal parts, with a liberal addition of river sand finely sifted. Replace them on the shelf, and shade for a time from hot sunshine. The seedlings will soon fill these small pots with roots. They must then be transferred into pots a size larger, and may afterwards be treated in the same way as those which have been propagated by cuttings. Keep them near to the glass, and give abundance of air on all favourable occasions. As soon as the weather will permit place them out of doors upon a bed of ashes of sufficient thickness to prevent worms from entering the pots. The situation should be an open one, to ripen the wood and induce a stocky or bushy habit, so as to insure their flowering as soon as possible. The size of pots to flower them in need not be more than 4½ inches.

Painting Hot-water Pipes (G. Wilson).—The following reference to this subject in Fawkes's "Hot-water Heating" will answer your inquiry:—If ordinary oil colour is used to paint hot-water pipes there will be an unpleasant smell which will last for some time, caused by the heated drying oil; this, however, will not be found so objectionable in a greenhouse as in buildings where persons assemble or dwell. If the pipes require to have a gloss upon them, the expensive paint called Brunswick black may be used

with advantage, or vegetable black mixed with good boiled oil and a very small quantity of driers may be employed. If any disagreeable smell require to be entirely avoided, and a dead colour is not an objection, the oil may be left out of the paint, and the pigment and turps employed, or a distemper wash (pigment and water) may be put on the pipes, or the pipes may be blackleaded. The last method is not always satisfactory in greenhouses, as if the surface of the pipe become wet during syringing or watering the pipes would have to be re-blackleaded.

Border Carnations (W.).—Twelve good varieties are Rifleman, Illuminator, Mrs. Reeve, Celestial, Unique, Perdita, Improvement, James Merryweather, Mrs. Matthews, Mary Morris, Hindoo, and Kate Vaughan. They require good rich soil, if heavy adding some road scrapings, and if light some strong turfy loam, mixing well with the soil, and a good dressing of well-decayed manure mixed with the soil, which should be turned over frequently on dry days. Plant early in April, and water if the weather be dry. Mulch a couple of inches thick in June, and afford liquid manure once a week, keeping the mulching moist by watering in the evening of dry days. The plants should have an open situation, but are the better for shelter from wind by a fence at a short distance, but not so near as to shade the plant. The scarlet white Cloves are valuable for border decoration, as also is the rose self Carnation Mary Morris.

Planting Flower Bed (A Lady Gardener).—We presume you wish to plant the bed with the plants named in your list, and those only. Acting thereon we advise 1 and 4 to be planted with Mrs. Pollock tricolor Pelargonium, 2 and 5 Happy Thought Pelargonium, and 3 and 6 with Flower of Spring variegated Pelargonium. 13 and 16 plant with Lobelia, and dot up the centre with Golden Feather Pyrethrum, the dots being about 1 foot apart; 14 and 17 Golden Feather Pyrethrum, dotted similarly to 13 and 16 with Lobelia; and 15 and 18 Sedum Lydium, dotted with Echeveria, about a foot apart, and up the centre of the Sedum. Instead of bringing the segments of the hexagon centre figure to the edges of the bed they should not reach it nearer than 6 inches, so as to allow of an edging all around the circle of Cerastium and that width, and taking it round 9 and 12, and the centre of those fill with blue and yellow Pansies, blue next the Cerastium, and yellow in the centre. 8 and 11 may be planted with Christine Pelargonium. But these will grow too tall for the other plants; therefore separate 8 and 11 from the Sedum in 15 and 18 by a single line all around of Golden Feather, and fill the centres with blue Pansy. Line 7 and 10 all around with Lobelia, and fill the centre with white Violas. For the centre of the bed we should have a Dracæna, and plant Christine Pelargonium in a circle, cutting the outer edges of the segments, the Dracæna being just high enough to show above the Pelargoniums.

Mushrooms in Boxes (C. Watts).—Many persons have grown them in boxes in sheds and other places, and one individual has grown them under the table in his cottage and in a cupboard. The case is recorded in the last edition of Wright's "Mushrooms for the Million," as follows:—"An early edition of this treatise having reached the hands of a Mr. Isaac Leedham, a working painter at West Derby, Liverpool, he attempted to grow Mushrooms in boxes in his cottage. Last August the writer surprised Mr. Leedham by a call. At the bottom of a cupboard in which crockery was kept on the shelves a Mushroom bed was in full bearing; in another similar place a bed for succession was prepared. Under the table were boxes—one bearing a full crop, another recently spawned; packed on a heap of coals in an outhouse were similar boxes, some in bearing, others to follow. These were rough boxes, 2 or 3 feet long, less in width, and about 8 inches deep. They were filled with horse manure beaten down firmly, spawned, cased with soil, and covered with hay to keep in the moisture. It was quite a museum of Mushrooms, of which the owner was not a little proud, and he gleefully told of 'many a frizzle.' The cottage was as neat and clean as the most fastidious could desire, and no one would suspect that Mushrooms were growing in the cupboards and under the tables. The case is cited, however, mainly as showing how easily Mushrooms may be grown by persons who study their requirements, and carry out intelligently the instructions that are given for producing them in and outdoors."

Orange Tree Unhealthy (D. Winter).—Your Orange is suffering from one or more of the following causes:—Imperfect drainage and a sour soil, caused by too much water, or from giving only a little now and then, but never enough to thoroughly moisten the ball of earth, or the brown scale may have closed the pores of the leaves and sucked out the sap. Any of the above will cause the Orange to throw off its leaves. You will determine for yourself which of the above causes are applicable to your case, and adopt a mode of treatment the opposite you have followed to effect a remedy. In your case we should turn the plant out of the pot, take away all the loose soil and as much soil from between the roots as it is possible to do without injuring them with a blunt-pointed stick, cutting off any decayed roots at the same time with a sharp knife. But if the roots are very much decayed wash all the soil away from them, take away all the decayed parts, cutting well into the quick. Prepare a clean pot sufficiently large to prevent the roots from being cramped against the pot sides, but not larger than just to contain the roots comfortably. Place a large crock on the hole in the pot; and if that be small, make it larger with a hammer. Put for a 12-inch pot 3 inches of smaller crocks at bottom of pot, or let the drainage occupy one-third of the depth of the pot, and on that place a little moss. Pot lightly, yet filling up all the crevices between the roots, and keep the neck of the plant well up, for the Orange, like the Camellia, soon becomes sickly when the roots are buried. Use three parts turfy loam and one-fourth leaf mould with a little rough sand intermixed. If the plant is infested with scale paint with a brush all the shoots with a solution of Gishurst compound at a strength of 8 ozs. to the gallon of water. Should you have the convenience of a hotbed at a temperature of from 75° to 85° your plant will be much benefited by being plunged there until it breaks into leaf, and none the worse if kept there until the wood is formed. The top heat may range from 65° to 85° for about six weeks, then it should be lowered so as to gradually harden-off the plant for the greenhouse—its proper place. If the plant be straggling or the shoots weak, cut them well back when the buds begin to swell, for the sap is then on the move and roots are beginning to form. Syringe gently twice a day—morning and evening—and keep the soil in the pot rather dry at first, giving more as growth progresses. If you have no hotbed, place the plant at the warmest end of the greenhouse, sprinkle

lightly morning and evening with tepid water, and although it will be longer before growth commences than by the former plan, yet it may possibly recover; and if it does, pray make a note of it and send it to this Journal, for no tree is so grossly maltreated and so little understood as the Orange. The after-treatment of the Orange is to pot in March, adding a little decayed manure to the compost mentioned before, and to keep the leaves and stems clean by frequent sponging with a weak solution of soft-soap and water.

Carnations for Winter (W).—You will find the following free-flowering useful kinds—Purity, La Belle, Miss Jolliffe, A. Alegatière, Belle Rose, and Mons. de Combs. If you obtain young plants rooted in autumn either from cuttings or layers and now established in 3-inch pots you will be able to grow them into good specimens for flowering next winter. Starved and stunted examples that have been kept in small pots for some time are useless for your purpose, as they will never make robust plants. It is a usual practice to strike cuttings at the present time in gentle heat under bell-glasses, the young Carnations being carefully and gradually hardened, then placed singly into the size pots named above. The plants as they extend in growth are tied to stakes; when they are healthy and vigorous they branch freely without topping. They must not be allowed to become root-bound or they will be seriously checked; they must be placed into larger pots directly a good number of roots have reached the sides until they are placed in the size in which they are intended to flower. These plants should be grown in a cold frame until the weather is sufficiently favourable for standing them outside, which can generally be done some time before they are ready for their largest pots. After potting for a few days keep the frame close until the plants commence rooting afresh in the new soil. Water should be applied carefully and judiciously, or satisfactory results will not follow. They must not be overwatered, at the same time the soil should never be allowed to become really dry. Liquid manure is good; they will not bear it strong, and it is better and safer to apply a little artificial manure to the surface of the soil occasionally. The plants must be well syringed during summer to keep them free from red spider. Carnations do well in a compost of fibry loam three parts, the other part being composed of decayed manure passed through a fine sieve, leaf soil and sand. In autumn when there is fear of frost the plants should be housed in a light airy position as near to the glass as possible where the night temperature during winter will not fall below 45°, but a close atmosphere will soon ruin them.

Stove Plants (Rosa).—The plants you name require a close moist atmosphere where they can be shaded from the sun during the summer months. The winter temperature from the end of October until the present time should range from 60° to 65° at night according to the weather; if mild the latter, if very cold and frosty the former. A rise of 5° by day from fire heat will be ample. During the spring and summer months the night temperature should range from 65° to 75°, which should be gradually raised from the winter temperature and then as gradually lowered again during autumn. The day temperature during the summer should be 10 or 15° higher from sun heat. None of the plants must be exposed to the strong rays of the sun, or their beautiful foliage will not be produced in perfection. During the winter the Sonerilas and Bertolonias should be kept close under bell-glasses or handlights, in which they will pass the winter in better condition than in the drier and more airy atmosphere of the stove. During summer they will stand in the house and do as well or better than under the hand-lights. The tops may be rooted under these handglasses; they will grow with greater freedom than the old plants, and make fine specimens in about half the time. The cuttings should be inserted singly in small pots filled with sand and be afterwards grown in equal parts of sphagnum moss and fibry peat with a liberal dash of sand; they will do well in the peat and sand if you have none of the former. The Cyanophyllum requires plenty of heat and moisture at its roots as well as in the atmosphere. It should also have liberal root room, or it will not develop and retain its noble foliage. This plant will grow well in fibry peat and sand, or a mixture of peat and loam. The Cissus will also grow well under the same conditions. We do not doubt that your climbers will in time grow less luxuriantly and in all probability flower satisfactorily. The Ferns will do in a lower temperature than the majority of stove plants. During winter a night temperature of 55° to 60°, and 65° to 70° during summer, with a rise of 5° or 10° by day, will suit them well. During winter little or no air must be admitted, and in spring when the sun is very warm and the air cold it is better to draw down the blinds and allow the temperature of the house to increase rather than admit cold currents of air. During mild days air should be admitted gradually as soon as the temperature of the house commences rising, increasing the ventilation in advance of the increasing heat, and the house should be closed gradually as the sun declines. Your gardener is right, the hot-water pipes should not be syringed, the steam thrown off by syringing the pipes when hot being decidedly injurious. You had better discontinue this practice at once, and maintain the requisite moisture by syringing the plants and stages upon which they stand. There are instruments very similar to thermometers for testing the moisture of the atmosphere, but we do not think one would be of much service to you. A little practical experience will soon enable you to show how much moisture to maintain in your house for the well-being of the plants you cultivate. No doubt your gardener is right about syringing the plants growing in the rockwork; he is in a better position to determine if the drainage is good and what syringing the plants will bear much better than we can from the limited information before us. We do not see any reason why your Calanthe should not flower if you mature its pseudo-bulbs thoroughly by admitting light and air; it is a cool species, and if grown too warm will not flower. It must be well rested annually. The falling of your Gardenia buds is due to a check caused either by the steam from the hot pipes or sluggish root-action, brought about undoubtedly by the treatment the plants have been subjected to. For a book on stove plants write to Mr. B. S. Williams, Victoria Nurseries, Upper Holloway, London, N.

Names of Plants (P. E).—The plant is Peperomia Saundersi. It can be easily grown in a stove or similar house, employing a compost of peat and loam. You may succeed in striking cuttings of the growth, but we doubt if you will with the leaves alone. (F. G).—Your specimen was not in good condition, but it resembles Thunbergia alata alba. (Pavo).—Helleborus fetidus.

COVENT GARDEN MARKET.—FEBRUARY 25TH.

No alteration to quote this week, business being very dull and supplies quite equal to the demand.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples	½ sieve	2 6 to 4 6	Oranges	100	4 0 to 7 0
Chestnuts	busbel	16 0	Peaches	per doz.	0 0
Cobs, Kent	per 100 lbs.	55 0	Pears, kitchen	dozen	1 0
Currants, Red	½ sieve	0 0	„ „ dessert	dozen	2 0
„ Black	½ sieve	0 0	Pine Apples English	lb.	1 6
Figs	dozen	0 0	Plums	½ sieve	0 0
Grapes	lb.	3 0	Strawberries	lb.	0 0
Lemons	case	10 0	St. Michael Pines	each	3 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes	dozen	2 0 to 4 0	Lettuce	dozen	1 0 to 1 6
Asparagus	bundle	7 0	Mushrooms	punnet	0 0
Beans, Kidney	100	2 0	Mustard and Cress	punnet	0 2
Beet, Red	dozen	1 0	Onions	bunch	0 3
Broccoli	bundle	0 9	Parsley	dozen bunches	2 0
Brussels Sprouts	½ sieve	2 6	Parsnips	dozen	1 0
Cabbage	dozen	0 0	Potatoes	cwt.	4 0
Capicums	100	1 6	„ „ Kidney	cwt.	4 0
Carrots	bunch	0 3	Rhubarb	bundle	0 4
Cauliflowers	dozen	2 0	Salsafy	bundle	1 0
Celery	bundle	1 6	Scorzonera	bundle	1 6
Coleworts	dcz. bunches	2 0	Seakale	per basket	1 0
Cucumbers	each	0 6	Shallots	lb.	0 3
Endive	dozen	1 0	Spinach	brshel	2 0
Herbs	bunch	0 2	Tomatoes	lb.	1 0
Leeks	bunch	0 3	Turnips	bunch	0 4



SEED TIME.

GREEN crops have for some years been growing in importance, and now that ensilage has become an accomplished fact, and greater attention is being given to dairy farming, due attention must be given to the allotment of a fair proportion of the land to such crops. Permanent pastures may be our end and aim in dairy, sheep, and cattle farming generally, but let us take particular care that we see our way clearly, and so apportion our cropping that the farm may be self-supporting, that there be no possibility of a scarcity of home-grown food in March and April, not a single item of expenditure in our balance-sheet for corn, cake, or fodder. By the time this article is published March will be close upon us. Of what ought our food supply to consist now? Of corn, we should have ample store of Wheat, Oats, Barley, Peas, and Beans; of roots, Mangolds, Carrots, Parsnips, and Swedes; of fodder, meadow and seed hay, Pea haulm and Oat straw, and silage; of green crops ready for immediate use and to follow, cattle Cabbage, Rye, Perennial Rye Grass, winter Oats if required, Trifolium incarnatum, and winter Tares. With the exception of hay and silage, arable land is required for the cultivation of all this food, and as the high value of ensilage grows upon us, we certainly shall not rest contented with the crop of ordinary grass land for filling the silo.

Spring Tares, cattle Cabbage for autumn use, white Mustard and Lucerne, are also crops for which land is required in March or April. Of speculative crops we shall in future avoid Prickly Comfrey, concerning which we repeat that no well-fed animals except pigs would touch it, and even they would only eat a little of it. This was the result of a moderate trial of it, but we are credibly informed that it has been used with success for pigs upon a home farm where a large number are kept. Green Maize appears worthy of a trial, and we purpose sowing half an acre or an acre of it this season after Rye or Tares. The mistake which has been made with Maize in this country is sowing too early. The young plant is so tender that the seed must not be sown till all chance of frost is past. The Maize crop at Merton last year was sown on June 7th, and when it was cut on September 11th, there was the marvellous result of 30 tons per acre in three months. It is stated that the manure used was fifteen loads of farmyard manure and 3 cwt. of superphosphate per acre, a by no means extravagant dressing, and yet this has been termed fancy farming by a high authority. The quantity of seed used was 6 to 9 pecks per acre of the large flat-seeded Maize. Maize is cultivated for ensilage; it is asserted that to feed animals with the chopped Maize in its raw state would either kill or injure every beast that tried to digest the woody stalk of the Maize, but in the silo the first process of digestion is gone through. The woody fibre softens, but the leaves and stalks retain much of their natural appearance.

Last summer we built our first silo, and filled it with coarse herbage of grass and rushes from a neglected outlying pasture. It was cut and carried at once, and put into the silo green and wet, for rain fell while it was being collected; the trial was therefore a severe one. The fact that really good grass was not used for this trial shows the existence of some doubts as to the result, nor were these doubts set at rest till the silo was opened a few weeks ago. The silage then proved to be really excellent food; it was moist, slightly warm, of a dark brown colour similar to highly heated hay, and it had a pungent vinous odour, so strong as to be perceptible at some distance from the silo. A little of the silage was mouldy at the top, sides, and bottom, and it was very mouldy close by the door, but the bulk of it is sound, palatable, wholesome food. The eagerness and evident relish with which the animals eat it dispelled all doubts as to the practical utility of the silo, and its very great value as an aid to profitable farming. No doubt enthusiasm has led to highly coloured statements as to the profits of silos. That is just as unavoidable as is the pooh-poohing of those who always lag behind with their hands in their pockets and talk of "the good old times." The bottom of our silo is paved with bricks, and the walls are of 9-inch brickwork. The door is evidently a mistake, and it will be taken out and the doorway bricked up. A facing of Portland cement will also be given to the whole of the brickwork inside the silo, the mouldy silage at the sides showing that there is an ingress of air which must be stopped. Inch planks were laid upon the silage across the silo, and for pressure we used boxes of stones. By laying planks across the silo we have only to remove enough for cutting out the first section of silage, the others being left with the boxes of stones upon them till we are ready for another section, and so the pressure is kept upon the silage till it is used. Economy and simplicity may be claimed for the planks and boxes; certainly nothing can be more useful or suitable for the purpose, and we are bound to avoid all unnecessary expense in an undertaking for which economy is claimed as a special merit. The silo, then, is an important factor in our consideration of ways and means, and attention must be given it at seed time as well as later in the year. Every home farm must have enough silos to contain a fair proportion of the green crops of the farm. Any spare building with a roof over it can be taken for it, but no building is so suitable as the old barns which have fallen into disuse since the flail has been ousted by the threshing machine. Do not rush into a heavy outlay at once, but let one or two silos suffice for this year by way of trial, so that any faults of practice or in the buildings may be set right, and a clear practical knowledge of the making and uses of the silage be acquired before this revolution in farming is fully entered upon.

Successional crops of spring Tares are of especial value for folding ewes and lambs, and we have nothing better with a certain quantity of dry food for finishing lambs for the July and August fairs. For cows and horses the value of Tares is too well known to require particular mention. We object to successional sowing of winter Tares in September and October, because the crops from the earlier autumn sowings are so frequently lost from cold, wet, winter weather, from slugs, and where partridges are plentiful they are very destructive to forward Tares. Rather, therefore, do we prefer to make one sowing of winter Tares in October, and successional sowings of spring Tares in March and April onwards to the middle of May. Once a fortnight is not too often where the demand for this kind of food is large, as we then have a supply from May throughout summer till about the middle of October.

Lucerne is said to yield from 30 to 40 tons of green food per acre. We know that it is a profitable crop, for we had it under cultivation many years ago, and we followed the plan of drilling the seed in rows a foot apart, manuring and digging between the rows every winter. Under this treatment the plants continued productive for several years, and the growth was so much valued for horses that it was specially reserved for them. Now, however, it is considered to be equally good for dairy cows. American dairymen declare that when cows are fed on Lucerne the milk and butter are at least 20 per cent. greater and much richer than when the cows are pasturing on native grasses. Broadcast sowing, 20 to 28 lbs. to the acre, in March may be tried, as it is strongly recommended, or drilling at 12 to 15 inches apart, for which about 24 lbs. per acre is required.

Bare fallows do not come into our arrangements, they are part of an obsolete system of farming with which we have nothing to do. Foul land may be kept for spring or early summer cleaning, and immediately sown with white Mustard, 20 lbs. to the acre. If food is wanted for sheep let them have the Mustard, but if possible plough it in as soon as it is fully grown, and before it develops seed. Sow Mustard again if the

land can be spared, and again plough it in. If the land is poor it may well be set aside for a series of summer crops of Mustard to be ploughed in, and so store it with fertility once more. After so fine an autumn farm land generally is cleaner than it has been for several years, yet if it is poor and the supply of manure falls short of our requirements, then may we advantageously revert to the Mustard, and so prepare it for autumn cropping.

CARTER'S "FARMER'S HANDBOOK."—This annual illustrated trade medium, besides representing the specialities of the firm, publishes special articles of interest to agriculturists—namely, on "Grass Lands and Dairy Farming for Profit" by Professor John Scott and the "Silo in England" by Mr. H. Kains Jackson, including a very good figure of a silo, showing the application of mechanical pressure for compressing the silage. The work also contains articles on "Cabbage as a Field Crop," "Farm Pests and their Enemies," and "Notes on Permanent Pastures."

OUR LETTER BOX.

Clearing Couch Grass from Clay Land—Ploughing in Mustard (A. W. E. V.).—You say that your clay land is full of knotted couch, is very poor, and that you wish to eradicate the couch to impart fertility to the soil, and then to lay it down for permanent pasture. First, then, the land must be clean, and to render it so you have from the present time till the second week in July. Some men should at once be set to fork out the thickest beds of couch, to be followed by the plough or a cultivator according to the state of the weather, the object being to break up the soil sufficiently to set the harrows at work and to follow them by hand-picking. Forking, hand-picking by women and boys, as well as repeatedly stirring with whatever implement can be best used—ploughs, cultivator, horse hoe, harrows, as the condition of the soil admits of, will enable you to get rid of most of the couch. But you will be unable to do this thoroughly if the spring proves wet. We hope you may have favourable weather, so that by the second week in July the soil may be tolerably clean and ready for the next step, which is the sowing of White Mustard, 20 lbs. of seed per acre. This crop is to remain untouched till it is in full flower, and then it must at once be ploughed in as manure. It is considered by competent judges that the value of the decaying Mustard as imparting fertility to the soil is from £4 to £5 per acre. The Mustard while growing should check any further growth of couch, and if when the Mustard is ploughed in the soil is really clean, you cannot do better than sow your seed for permanent pasture with Wheat, and next spring to give it a moderate dressing of artificial manure of quarter cwt. nitrate of potash, three-quarter cwt. nitrate of soda, quarter cwt. steamed bone flour, quarter cwt. superphosphate, quarter cwt. coprolite.

Salt for Pastures (R. S.).—We do not recommend the application of sal as manure for pastures, except they consist of very dry sandy, gravel, or limestone subsoil, but a dressing of fishery salt or kainit may answer of 3 or 4 cwt. per acre if the pasture is situated away from the coast, as there is usually a sufficiency of saline particles floating in the air within a few miles of the sea.

Fowls not Thriving (West Herts.).—We can suggest three things as wrong in your system. In the first place it is wrong to put lime in the drinking water, or even to scatter unslaked lime in the house. If the fowls pick it up it acts as a caustic on their internal organs, and is quite enough to produce the symptoms of indigestion, crop-binding, &c., to which you referred in your former letter. In the second place, unless the road sweepings contain small gravel they are useless and probably injurious. Your fowls have thus not sufficient gritty matter for their gizzards. In the third place your feeding is too fattening for most fowls. Discontinue the maize. Feed for a week on short commons of oats or oatmeal only, and give a couple of doses of Epsom salts. Soak the grain in a quart of water with a dessert spoonful of salts in it. The cock most likely is suffering from the effects of the lime combined with a slight cold.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain
	Barometer at 32° and Sea Level.	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1885. February.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In
Sunday	29.563	47.7	47.0	S.E.	44.1	51.8	46.1	55.6	44.3	0.571
Monday	29.312	49.7	49.2	S.E.	44.8	51.8	47.3	54.0	43.2	0.755
Tuesday	29.346	39.4	39.1	E.	45.4	51.8	38.9	52.8	36.3	0.043
Wednesday ..	29.595	35.4	33.8	N.	43.6	45.2	33.8	63.4	26.9	—
Thursday	29.820	32.9	31.5	S.	41.4	43.4	27.9	63.4	20.8	—
Friday	29.694	36.2	33.3	N.E.	39.3	40.0	31.6	45.8	24.8	—
Saturday	30.209	29.8	23.7	E.	39.2	39.5	27.6	61.0	21.0	0.01
	29.618	33.7	37.5		42.6	44.8	36.2	58.1	31.9	1.387

REMARKS.

15th Wet —. till noon, fine afternoon, wet evening.

16th.—Very wet all day.

17th.—Very wet till 11 A.M., fine afterwards.

18th.—Brilliant day, with continuous sunshine.

19th.—Fine and bright.

20th.—Fair but no sun, dry cold wind.

21st.—Ice four-tenths of an inch thick formed during night, fine bright day.

A week of very variable weather; the first three days very wet and as mild as the middle of April, and the last three cold and frosty with keen dry wind.—G. J. SIMONS.



COMING EVENTS

5	TH	Royal Society at 4.30 P.M. Linnean Society at 8 P.M.
6	F	
7	S	
8	SUN	3RD SUNDAY IN LENT.
9	M	Royal Geographical Society at 8.30 P.M.
10	TU	
11	W	Society of Arts at 8 P.M.

ORCHIDS IN 1885.

SUCCESS in an unexpected degree attended the efforts of the Royal Horticultural Society to inaugurate a series of novel exhibitions devoted to special subjects, as in the case of the Apple Congress in the autumn of 1883, and the Daffodil Conference in the spring of 1884, and hopes were reasonably entertained that such satisfactory results would lead to further experiments of a similar nature. The report of the Council, recently issued, has realised these expectations in the announcement of an Orchid Conference, to be held in May of the present year. For many years there has been an increasing desire that London should have a thoroughly representative show of the wonderful and beautiful plants which have deservedly won so much popular favour, but difficulties have constantly presented themselves which apparently were considered insurmountable until some additional energy was brought to bear upon the matter. At Manchester the Whitsuntide Exhibition annually presents a display of Orchids such as hitherto has never been equalled in Britain. At the Royal Botanic Society's Summer Shows charming banks of Orchids are also usually provided, while at the Royal Horticultural Shows of a few years since numbers of handsome specimens have been arranged. These, together with innumerable smaller groups or collections at provincial exhibitions, have conclusively proved what magnificent displays can be produced by these plants, and how great an attraction they are to the plant-loving public. In accordance, however, with the idea which found expression at the Apple Congress, it has been determined that the exhibition to which Orchid growers are now looking forward with considerable interest shall not be of a competitive character, but that the possessors of these valuable plants shall be invited to contribute their treasures and mutually assist in obtaining a representative display free at least from the feelings too often engendered by the hankering after prizes occasioned by the ordinary mode of exhibiting. It is admittedly a utilitarian age, but the love of horticulture is not so dulled that its votaries require mere pecuniary compensation for all their labours in its behalf, and something can yet be done for honour and the pleasure derived from advancing its interests.

The time selected for the scheme is an exceptionally favourable one in all respects. The election of one of the most distinguished amateur orchidists, Sir Trevor Lawrence, Bart., M.P., as President of the Royal Horticultural Society, would alone be sufficient to give an impetus to the cultivation of these plants such as they have never previously had, and would naturally suggest the desirability of commencing his season of office with an exhibition of his favourites. That in beauty and peculiarity of floral structure Orchids possess ample claims to the popular favour they have gained cannot be doubted, but in respect of their commercial value, they have assumed an importance which no family of plants hitherto reached. There have been manias of

various kinds more or less widely spread, and in their results correspondingly injurious, such as the notorious Tulip craze of long past years. Several genera of plants have also from time to time come to the front, and then after their brief day of popularity have relapsed into comparative and often unmerited obscurity, of which we find instances in the Heaths and hardwooded plants. Others, again, have advanced more steadily, and obtained a firm unvarying hold upon the people's favour, and of these we have the best examples in the Rose and the Chrysanthemum.

None of those named have, however, become of a commercial importance equal to the Orchids as regards their actual monetary value. The amount of capital invested in Orchids is enormous and incalculable; both nurserymen and amateurs have expended large fortunes in their purchase and cultivation, and the present value of the London trade collections alone would be astonishing. As with every species of commodity, this value varies considerably, depending upon the scarcity or superior beauty of certain forms, but it is only the case with the extreme prices, and there is a standard value below which the plants seldom fall. For varieties of acknowledged beauty the highest prices are still obtained, as was instanced in a London sale room last week, when a specimen of *Cœlogyne cristata alba* with seven flower spikes was sold for £131, and other plants of that variety have realised still higher prices. If by any lucky chance a person should become possessed of a few hundred plants of this white *Cœlogyne* the value would fall considerably, but it would for many years continue to realise high prices.

A well-known example of this is *Cypripedium Spicerianum*, which, when only a few specimens were known to be in this country, realised fabulous amounts, but a large importation speedily reduced its value, which is again steadily rising as the supplies from its native home appear to be exhausted. The least variable of the high-priced Orchids are the hybrids, or varieties obtained by cultivators in this country, as frequently these are very difficult to propagate, and consequently many years elapse before there are sufficient plants in the country to affect the price. *Dendrobium nobile nobilius*, for example, is worth much more than its weight in gold, as the smallest growth obtainable is valued at ten guineas, while many *Cattleyas* and *Cypripediums* take a similarly high position, though the last-named are generally more readily increased than the others. After the treasures which command from 50 to 100 guineas come the more abundant species, which range from *Odontoglossums* worth a few shillings to any number of pounds, but the total amount, were it possible to ascertain it, even if taken at a moderate estimate, would most indubitably indicate that the position occupied by Orchids at the present time is one of great importance, rendering them amply worthy of the attention they will this season receive.

It is interesting to glance at the advance Orchids have made during the present century. Before the year 1800 very few species were known beyond our native Orchids and a few from North America and the Cape of Good Hope, but early in the present century their numbers began to increase rapidly, and within the past fifty years collections have advanced at a surprising rate. The East Indies and neighbouring regions have yielded great numbers of beautiful species, tropical South America has been diligently searched for its magnificent *Cattleyas*—all the tropics of the earth have, indeed, been explored for orchidic beauties or rarities. Scores of collectors have faced untold dangers in their search for Orchid gold mines, the metropolitan and provincial sale rooms having afforded good evidence of the success of their labours. Hundreds of thousands of plants have been annually imported, and some firms estimate their importations by the ton, so that it is not surprising if, with all this energy, the number of species in cultivation has rapidly advanced. Some evidence of the growing popularity of Orchids is also

shown by the records of certificated plants, for during the past year no less than seventy-one species, varieties, and hybrids were honoured with certificates, or more than half the total number of plants thus recognised, excluding the florists' flowers

This is remarkable, and shows a great increase over last year, when fifty-six were so honoured. It also appears still more extraordinary by taking a longer period into consideration. For instance, from 1859 to the end of 1871 the Royal Horticultural Society only certificated 250 Orchids, while from 1872 to 1884 the number was 262. Thus, in a period of about a quarter of a century we have had about 500 Orchids certificated, and the number last year is nearly one-seventh of a total of twenty-five years. It is further worthy of note that in addition to the certificated Orchids fully as many novelties in that family have been figured or described in various works or periodicals.

No more striking evidence of the sustained popularity of Orchids could be required than these facts, and if some large collections have been sold there must have been some scores of smaller ones formed. Around the metropolis and large cities in the midlands and the north collections have multiplied greatly, and so well are the principles of Orchid culture now understood that it is extremely rare to find an ill-grown or unsatisfactory plant. Near London especially the examples of good culture are very abundant, and many a valuable lesson may be learned in suburban gardens where the speciality is Orchids. In view of the unusual interest which these plants will excite this year it is intended to give in these pages notices of Orchid-growing establishments in the metropolitan district, and these will convey some idea of the enthusiasm they have evoked, and the success which has attended the efforts of their cultivators.

It can only be hoped that all will come forward readily and assist in rendering the Orchid Conference of 1885 memorable in the annals of horticulture as the most wonderful exhibition of these remarkable plants that the world has ever seen.

CROPPING.

GROUND occupied with the same kind of crop for several consecutive years becomes what is termed "sick," and the plants do not make profitable growth until some intervening rotations have been arranged. The alternation of crops is more important in farming than in gardening, from the circumstance that the majority of agricultural crops perfect their seeds, which are more exhausting to the soil than crops that do not reach the flowering stage in many instances, and in most do not get beyond the green seed state before they are utilised. For instance, hay crops are impoverishing, whilst pasture is improving, and Clover, cut it may be twice, is not nearly so exhausting as when it is cut for seed. Root crops are not so exhausting as cereals. There is also great difference in the application of manure to agricultural land and to garden ground. The former may be manured twice in a four-course rotation, gardens receive it at least once a year and in quantity equal to that given high-class farm land in the whole course of rotation, therefore we may dismiss agricultural practice as inconsistent with and inapplicable to horticulture.

The theory of rotation has been thought to rest upon the following:—That the excretions of the plants by their roots poison the soil so as to prevent the ground supporting the same kind of plant again until the deleterious matter be decomposed, or a different crop be taken that would transform or remove the injurious substances. This theory is certainly very problematical, as we may sometimes see plants grown in the same pot for a number of years. I find instances given of this so far back as June, 1835, in the *Gardeners' Magazine*, notably Peach trees grown in pots that had not been repotted for more than twenty years, yet they annually ripened a moderate crop of fruit, the trees having a dressing round them of decayed manure at intervals. Another instance is given of a double white Camellia, which had not been repotted for fifteen years, yet annually made young shoots, and produced remarkably fine flowers; and allusion is made to Fig trees in pots bearing fruit for several years, the soil they grew in not being changed. Further evidence of the defect in this theory is given in the case of leguminous plants, in that Kidney Beans were grown on the same ground for ten consecutive

years without any diminution of luxuriance or productiveness. Other evidence is adduced; indeed, every gardener can give many facts that would completely upset the theory that barrenness of soil arises from the deposition of noxious matter. If the poisoning of the soil is effected by excretion, how is it that the Vines at Hampton Court and Cumberland Lodge have not died long since? I have known Peas taken on the same border for not less than fifty years, and Potatoes on another for a like period, without anything being farther desired as to crop.

The necessity of alternation or rotation of crops is also thought to be occasioned by the abstraction of the substances contained in the soil until it becomes exhausted. This is certainly more consonant with practice than the other theory, as certain substances are essential to plant growth, and these being derived from the soil, it follows that if they are not present in sufficient quantity or in such a state that they can be absorbed by the roots the plants must suffer and the crop prove unsatisfactory. Taking the same crop several times from the same ground must decrease those portions available as food for plants, and the result is that there is not sufficient left, or it does not become solvent quickly enough to meet the demands of successive crops.

Plants differ considerably in their demands for mineral substances, and it is matter for consideration whether the roots have not the power of so acting on the soil as to dissolve sufficient by the aid of material undergoing decomposition. We know that some plants need much lime, others sand or silica, some not thriving without a considerable quantity of soda or potash, and others do not succeed without phosphoric acid; therefore it is evident that it will be beneficial to regulate the crops accordingly. Such deductions, however, are sometimes misleading in practice, as crops requiring a large amount of mineral food succeed very well after others requiring the same substance largely; hence this theory, though more satisfactory than the other, is at variance with practice and not conclusive.

Experience indicates that a soil is rendered sterile as regards a certain crop by the abstraction of certain mineral substances. It is strange, however, that no improvement is effected by the application of the mineral substances in such a state as to be at once available as food; but how different is the case if we afford an extra dressing of manure and leave out the mineral substances. A piece of ground will grow the same crop for very many years in succession, which would point rather to exhaustion of the decomposing than mineral substances, the former only needing to be present to cause that solubility or disintegration of the mineral matter as will liberate sufficient for every requirement of cultivated plants. Ammonia and carbonic acid in the soil are the basis of all rotations of crop, and upon their presence or absence depends the fertility or sterility of the soil. There are other causes than the exhaustion of mineral matter that render a rotation of crops essential to successful practice, and some of our most successful vegetable growers never apply minerals at all, being careful only to give sufficient decomposing matter to insure its continued and increasing fertility.

Apart from those considerations, the necessity of a change of crops is dependant on other facts equally important to those stated. In cropping much depends on the natural fertility of the soil, the manurial matter at command, and the products required. The garden crops may be classed under three heads—Seed crops, such as Peas, Broad Beans, and Kidney Beans; root crops, as Beet, Carrots, Parsnips, &c.; and the Brassicas, such as Cabbages, Cauliflowers, and Broccoli. Thus plants grown for their seeds should not follow each other, but Peas should follow root crops. Root crops may succeed Peas; and Brassicas may be taken after roots (except those of their own order like Turnips) and Peas or Peans. As a rule the cropping must be regulated as far as possible so that plants of the same family do not follow each other. Yet the farmer who is such a stickler for rotation of crops without the least compunction follows with Oats after grass, and in a similar way the gardener sets at nought the rules of rotation, relying more on manuring highly and trenching frequently than on any particular system of alternation. Good cultivation is essential with the gardener, as, guided by that best of all tests, experience, he knows that ground cropped heavily must be well manured.—G. ABBEY.

(To be continued.)

GRAPE GROS MAROC.

WHEN offering some remarks upon this Grape a few weeks ago the main object I had in view was to obtain from others who may have been more successful than myself some hints in the cultivation of the much-lauded Gros Maroc. I invited those who sung its praises to give some proof that it really is the grand late-keeping Grape it professedly was sent

out to be. In response Mr. Stephen Castle is the only one who has ventured to say a word in its favour, remarking "It will hang till Christmas;" and adds, "This was once considered rather late." To compare the keeping qualities of Grapes sent out nowadays with those grown by our grandfathers, to say the least of it, is somewhat far-fetched. If he can give it no better testimonial than that "it will displace Black Hamburgs for Christmas use" his recommendation is a poor one. Generally speaking Black Hamburgs are out of season after September, and if comparisons must be made for Christmas use, why not compare it with such sorts as Madresfield Court, Mrs. Pince, West's St. Peter's, or Gros Guillaume? In quality Gros Maroc is much inferior to either of those varieties. This reminds me of another Grape that was introduced to cultivators some years ago as a white companion to Lady Downe's Seedling; but in order to get a certificate from the Fruit Committee of the Royal Horticultural Society it had to be laid before that authority during September, and it appears Gros Maroc could not be kept later than October to be a candidate for the much-coveted distinction. Awarding certificates to Grapes during the autumn that are warranted to keep until March is, to say the least, an extraordinary practice, and in such cases as this a delusion and a snare.—J. McINDOE.

FORCING HYBRID PERPETUAL ROSES.

(Continued from page 169.)

THE number of Roses to be forced should be divided into batches if a continuous supply of blooms is required until they can be gathered from plants in the borders outside Hybrid Perpetuals can be had in bloom by the end of January, but the blooms produced so early in the season are never very satisfactory, and such early forcing is really unnecessary when an unbroken supply during the winter and spring can be maintained by forcing Tea varieties. The end of the following month is early enough, when good blooms can be produced, but the later in the season the plants are brought into flower the stronger and finer the blooms will be. The best specimens should be kept back and grown under cool conditions for the purpose of preceding the blooms from outside, thus forcing the worst-shaped plants early when the days are dark, short, and sunless. By this system the most promising specimens have every chance of growing strongly, while the early Roses, if exhausted after two or three years' forcing, can easily be dispensed with by preparing other plants for the purpose. Where very early forcing is conducted a few plants should be potted annually, or at the longest period every second year, by which means a stock of healthy well-prepared plants for the purpose can be maintained.

It may here be mentioned that where Moss Roses are required—and this is frequently the case in establishments where Rose blooms are appreciated early—that they will not bear undue forcing, or they will fail to flower satisfactorily. They may be forwarded as rapidly as possible under comparatively cool conditions, using as little fire heat as possible, and then success may be attained. We have a good number of Moss varieties in pots, but hitherto have found the common Moss, White Bath, and the Crested Moss decidedly the best. Blanche Moreau was highly recommended to us, and we have a good number of this variety, but it has never done so satisfactorily with us as White Bath.

After Roses have been forced and flowered indoors a great mistake is made in many gardening establishments, for the plants are cast outside. This is a barbarous system and too commonly practised; if the plants were of no further use or service they could not be subjected to worse treatment. Such often proves fatal, or so far injures the plants as to render them unfit for the same purpose another year. After the plants have flowered they should be well cared for and given the protection of a cold house or pit, in which they can be gradually hardened to stand exposure outside. The roots of the plants, as well as the foliage, must be kept perfectly healthy if the plants are to do well the following season. Roses are unlike many plants after flowering, and will not bear being placed in houses under the foliage of Vines or Peach trees, but must be accorded the full benefit of light and sunshine. Roses grown in pots under glass do not require any shade. Material should never be employed for this purpose, except for a few hours when the plants are in flower; even when the plants are in this stage very little shading will suffice. The only reason we advise its use for a few hours daily is to retain as long as possible that freshness and beauty which is characteristic of the Rose.

While forcing Roses in pots, and even after they have flowered, they should be syringed twice daily when the weather is favourable. This assists wonderfully in keeping the foliage clean and healthy. Care must be taken, especially after flowering, to apply the water with force to the under side of the leaves, for red spider is then more likely to attack them than earlier in the season. While growing a good supply of tepid water should be given at the roots; in fact, in no stage of growth, not even while at rest,

should they be allowed to have an insufficient supply, or the roots will suffer and the foliage be attacked by insects and disease. Directly the flower buds are formed the plants may be liberally supplied with stimulants in the form of liquid manure, or some good reliable artificial manure applied to the surface. After years of experience we prefer the latter, for fibry roots come to the surface in large numbers and are much more active in this portion of the soil than when liquids are poured into the pot. A good supply of moisture should be maintained in the atmosphere in which the plants are grown, but this must be regulated to a very great extent by the locality, position of the house, and external conditions. Care must be taken that the atmosphere of the house never becomes saturated, or injurious results will follow.

Roses, even when grown under glass, are subject to the attacks of many insects. One of the worst, and in some seasons the most troublesome, is a small grub that establishes itself in the foliage and causes it to curl, and also eats its way into the centre of the flower buds. The only sure and effectual way that we have found of eradicating them is to search the plants diligently when they make their first appearance and destroy them between the thumb and first finger. This is rather a disagreeable method, but it is a certain one, and a fine Rose bloom that might otherwise be destroyed is worth the trouble required. Red spider can be kept down by a free use of the syringe, but if the plants are properly treated this will give very little if any trouble until after the plants have flowered. Aphides are readily destroyed by a weak solution of tobacco water or two or three light fumigations with tobacco smoke directly they appear. This insect if allowed to become established soon arrests the growth of the plants, and in a very short time completes its work of destruction.

Mildew is perhaps the worst enemy the grower of Roses under glass has to contend with; but this need not be the case if due provision is made for growing the plants and their every requirement promptly attended to. Observation and a lengthened experience in growing and forcing Roses under glass has convinced me that plants being infested with mildew is entirely due to inattention, which causes a check and predisposes them to disease. The solution of softsoap and water which I have recommended so frequently in these pages as a preventive is the cheapest and best that can be used for the purpose. Nothing else is used here and mildew does not trouble us, but the solution is applied every time the plants are syringed, and when properly used and at the strength I have already recommended, it will not injure even the delicate petals of the Rose. If the plants are allowed to become badly infested this mixture is not strong enough to destroy mildew, and if a very strong solution of softsoap and water is applied it will not only injure the blooms, but the foliage as well. None of the mildew compositions in the market is of any use in destroying this pest until the cause has been found, such as dryness at the root or cold draughts, for if they destroy the mildew upon the plants it will appear again as if by magic. Strict attention to the requirements of the plants and the softsoap solution as a preventive will enable the grower of Roses under glass to have them annually without mildew.

The softsoap solution and the way in which it is mixed and used I give again for the benefit of new readers. Four pounds of softsoap are boiled in an old saucepan for twenty minutes, about one quart of water being added. This after being boiled is mixed in a vessel kept for the purpose with four gallons of water, soft water being preferable. About half a pint of this solution is stirred into each four-gallon can of tepid water every time syringing is done. The plants are not syringed with this solution at intervals of a week or a few days, but daily, and sometimes twice in the day when the weather is favourable. In addition to its use as a preventive of mildew it assists wonderfully in keeping red spider in check and renders fumigations for aphides seldom necessary. It also acts as a gentle stimulant, and imparts a fine dark glossy hue to the foliage.—WM. BARDNEY.

TRENCHING GROUND.

"VITISATOR" says, on page 145 of the Journal, that soils composed of chalk and gravel are perhaps better left undisturbed. In my last situation the kitchen garden was composed of a chalk subsoil, having only 6 inches of soil in some places, the greatest depth being only 12 inches. Beneath was a bed of flints and fine chalk run together, and it was very difficult to pick the first 9 inches, it was so hard, and the top soil was also full of couch. Having 700 persons to provide vegetables for, and only six and a half acres of land, I had the whole trenched 18 inches deep, putting the top spit, couch, and all into the bottom of the trench, and had the bottom picked up. The pulverised chalk was placed on the top, the flints were employed on the roads and paths, and covered with ashes from the build-

ing, so that it did not cost anything for material for roads. When I had almost completed the trenching a gentleman in the trade who was planting an avenue of trees for the managers told them that in his opinion I was doing the worst thing I could in bringing the chalk to the top. One of the managers and the superintendent spoke to me about it, as the outlay had been rather heavy. I told them that a year or so would decide which was right or wrong. I had to provide for sewage running over the land; the greater part was planted with Potatoes to give time to kill the couch, which they did. In the third quarter of the year I began to furnish a supply, and after paying expenses for the quarter there was a good percentage on the original outlay. The managers and superintendent often said to me afterwards, "Mr. So-and-so ought to come down and see if vegetables would not grow in the chalk," as the crops produced were surprising. A ton of vegetables was required every week, which I kept supplied after the midsummer quarter of the second year. The last half year I was there, after all expenses were paid connected with my work, there was a surplus of £98 on the right side. A profit and loss account was kept, the managers having the vegetables booked at the contract prices. Still, it is only fair to add that the ground would not have grown so large a quantity if it had not been for the sewage, which averaged 10,000 gallons of water per day.

I am now having nine acres of ground trenched for a kitchen garden in my present situation, part being a sandy loam and part a sour clay full of rushes and water. The loam is being trenched two spits deep, the first spit being placed at the bottom, grass upwards, then the manure, and the bottom spit on top. On the clay I am having the top spit burnt. Most of it will be planted with Potatoes this season, so as to kill the grass, and then at the end of the season it will be well forked up together, and no doubt it will make a good garden, as it has been thoroughly drained 3 feet deep. In some future number I may state how it answers.—C. F. P.

THOUGHTS ON CURRENT TOPICS.

I HAVE been waiting week after week in the expectation that our great "land reformer," Mr. Iggulden, would favour us with a few trenchant, or rather trenching, observations in reply to the criticism and discussion he has had the honour to evoke. I have so far waited in vain, and can only hope he has not felt himself buried 2 or 3 feet deep, as in that case I should be one of many others who would without doubt feel that some "good material" had been "placed at the bottom." As he does not believe in that system of management, I will indulge in the pleasant thought that he will yet come to the surface, where he has taught us "the best" ought to be, and I cannot help further thinking that it is time he was "turning up" again. I will therefore wait as patiently as I can for another week, and in the meantime turn my attention to other matters.

VINES come first, Grape culture being a subject on which gardeners never tire of reading, writing, and practising. Mr. McIndoe's letters are very welcome and suggestive. In his notes on page 104 he incidentally mentions that iron in the soil is the reverse of injurious, soil "strongly impregnated" with the mineral being described as "better" for the Vines than was the soil previously used, and which presumably contained little, if any, iron; sea sand and bones, we are told, have also been used liberally in the Vine borders at Hutton Hall. Every Grape grower either does or ought to know that bones are good for Vines because of the large per-centage of phosphate of lime they contain; but is the importance of apparently minor constituents sufficiently recognised?

MR. MCINDOE'S letter set me a thinking, and I had not to ruminate long before the conclusion was arrived at that both iron and silica are essential for the support of Vines. Iron is found in every part of a well-nourished Vine. It is present in the wood, bark, leaves, flesh, skin, stones, and juice. It is not in large quantities, it is true, but it is still there, and needful. It moreover varies, being nearly absent from some Vines because they cannot get it, and would be better if they could. Silica is present in still larger quantities in every part of the Vine, the skin and stones containing upwards of 2½ per cent. These, I believe are scientific facts, and as such, I think, ought not to be ignored.

ANOTHER fact, this time a very practical one, occurs to me—namely, the best Black Hamburg Grapes I ever saw, and I have seen a few, were the produce of a border that had more sand in its composition than I ever saw in any other instance of Grape culture, and the loam used was also impregnated with iron. Granted that potash, lime, phosphoric acid, magnesia, and soda were present, would the Vines and fruit have been so good without the iron and the silica? I certainly, and without any hesitation, vote in the negative; and would the Hutton Hall Grapes be so fine as they are without the iron and sand? Again I say No, because both are indispensable. It does not follow that if a plant or an animal needs only a little of a certain substance that little can be safely omitted. In comparison with the bulk of food that cultivators consume salt is trifling in quantity, but omit that trifle for a few years and what would be their condition? This may be twaddle to some readers possibly, but I have no objection to that; and at least Mr. McIndoe's Grapes are not to be "grinned at," and his hints on culture are, to me at least, worthy of thought.

I HALF promised an excellent friend that I would endeavour to refrain from dwelling so long on one subject in my mental jottings, but I find it

impossible to confine myself within the limits of any prescribed rule however desirable it may be to do so; and I have now decided to go on in my own way, and those who do not like to accompany me can skip this page, as I fancy there is usually a pretty good threepennyworth without it. So now for more about Vines and Grapes.

SOME time ago I had the temerity to advocate the use of liquid manure in winter, and some very good men regarded my observations as heretical. At the same time I complacently thought I was just a little in advance of them in the practice. Giving liquid manure to fruit borders during the resting period of the trees I was reminded could only make wet soil wetter, the roots could not absorb the nutrient matter conveyed, and all "that sort of thing;" but all was lost on me, because I knew by the experience of years and using tons of liquid food "after the fall of the leaf" that the tank water was profitably applied to fruit trees and Vines in properly drained soil. When I ventured to broach the subject I was only acquainted with one individual who adopted the same method as a system, and, as I think I have said before, he produced the heaviest crops of Grapes that had then been recorded in this Journal; but Mr. McIndoe's wonderful results have since been published, and what do we find that cultivator saying? I will cite his exact words from the page quoted, and I think there is no mistaking their significance. Here they are:—"In winter, after the Vines and houses have been cleaned an annual heavy covering of fresh cowdung is given, and well washed in with liquid manure from the farm tank." Read those words twice ye doubting ones, and note the weight of the crops on page 63; 70 lbs. to 90 lbs. per rod, in a span-roofed house 34 feet wide (outside measure), and then produce heavier crops without the winter feeding before you imply the practice is simply born of "vain imaginings." It is true that Mr. McIndoe uses Thomson's manure in summer as well, but if both the dressings were not good I fancy they would not find favour at Hutton Hall.

BUT I do not agree with Mr. McIndoe in everything. He asks on page 107, "if Gros Maroc Grape is worth growing?" and evidently thinks it is not, because he says, "Its skin is like leather, and compared with the Black Hamburg its flesh is anything but refreshing." I have not seen, nor do I expect to see, fine examples of this Grape in March, but last Christmas I had it with Black Hamburg and Black Alicante, and it was decidedly superior to both in every way; and "so said all of us" who compared them. As a late autumn and early winter Grape Gros Maroc appears to me good, inasmuch as the Hamburgs are practically over then, at least as regards colour, and the Alicantes have not developed quality. The variety in question "was sent out as a late Grape, and as such it must be judged," says your correspondent. If he means it is not worth growing if it is not both late and good, he must also, I think, apply the same ruling to Madresfield Court, which was described in the catalogue of a nurseryman of repute as "late," and as such I bought it; it was certainly not late, but decidedly good, and I still think it "worth growing." Mr. McIndoe possibly thinks differently, and I should like to hear what he has to say on the matter.

JUST one more word about Grapes and I will stop. The "two Thomsons" have told us how to prune that noblest of all white varieties, the Duke of Buccleuch. No doubt the advice is the best that can be given as to affording the rods plenty of room to ripen well, and then in shortening the laterals to leave four or five eyes. Admitting that there is yet something wanting of a "first catch your hare" nature. How are the general run of gardeners who grow most other Grapes well to produce good canes and rods of the noble Duke? That is what many want to know. Is the Vine best grafted, or on its own roots? Does it need more or less moisture in the soil and atmosphere than its congeners? or *what* does it want? I have seen good gardeners try their best and fail, then try again, but still the Duke proved stubborn, and they gave up in despair. Perhaps Mr. McIndoe can enlighten us, as I have read that he has grown this splendid yet capricious Grape satisfactorily. And now, at last, for a change.

VIOLETS have naturally received attention, Mr. Beachey having written poetically, and Mr. Orchard practically on these delightful flowers. Early and deep planting in generous soil in a breezy position is the chief factor in insuring success; late and shallow planting in warm places, such as near walls facing the south, leading to many failures. Stout young well-rooted runners cannot be planted too soon after the plants have flowered. With a deep firm root hold in good land, stout leaves and fine crowns follow; but by late and shallow planting the most permanent return is a colony of red spider. If early flowers are wanted never plant near a wall exposed to the sun, as the reflection of dry heat invites the enemy which devours the plants. But the shelter of a hedge or a row of espalier fruit trees is quite different, as there is then no reflected heat, but a stream of air filtering through which the Violet pest does not relish. If persons would grow Violets in open quarters in ground prepared as for Strawberries they would have ten times more flowers than by planting on warm borders bounded by walls.

No doubt, as "A Kitchen Gardener" suggests, vegetables have improved during late years, but I am strongly inclined to think that some of the old are yet as useful as the new. All the Peas but one—Duke of Albany—named on page 143 I saw grown last year with several others in rows of equal length, the pods of all of them gathered green and sold. I will now state that the early Pea that brought the most money was the true type of Dr. Hogg; the most profitable midseason variety was Huntingdonian, evidently a selection from the Champion of England;

and the best late and most remunerative of all, Ne Plus Ultra. The Giant Marrow was nowhere, but most of the others left little to be desired. I thought this prosaic experiment was not a bad way of judging Peas. However, I regard the majority of new vegetables as decidedly good, and also think your able correspondent is not a bad praiser.

AMONG other things he praises, I do not suggest unduly, certain kidney Potatoes, on page 167. From a bewildering host he selects four as presumably distinct, and amongst them Gloucestershire Kidney. I have had Potatoes under this name from three sources, and received as many different varieties. This led me to write to the Journal on the subject some time ago, and I was informed that the true Gloucestershire Kidney is just the true Myatt's. I wonder what your correspondent thinks about that.

I HAVE from time to time read much of what Mr. Bardney has written on Rose culture and profited by his record of experience; but there is a sentence in his article on page 168 that I stumbled over. It is this:—"Plants potted in autumn, even if done early, are not in a fit state for forcing; the growth will be weak, and the flowers, if any are produced, will be small and worthless." There is forcing and forcing. Such plants may, and probably would, fail if forced briskly to have blooms in February and March; but for a few years I have potted plants in October, and they rarely failed to grow strongly and give the best of blooms in April and early May. The pots were plunged in beds of leaves and the plants commenced rooting at once, as they will do when potted in October. The practice was commenced in 1849, so it is not a new-fangled notion.

"VITISATOR'S" very thoughtful contribution on "The Philosophy of Pruning" will, it is hoped, have the effect of inducing both gardeners and amateurs to give deeper study to the subject. Much of the so-called pruning that is inflicted on trees can only be properly described as mutilation, and more mistakes are made in pruning in summer than in winter. A common error is to defer the practice too long, thus encouraging the already too powerful root-action, then slashing off the shoots and clearing them away in armfuls. This not only gives a shock to the trees, but by suddenly exposing the hitherto shaded leaves at the base of the shoots to the hot sun they simply collapse. The object of the cultivator should be to develop the first formed leaves for the formation of spurs under the full influence of light, and they will assimilate and secrete matter that is at once necessary for the structure of the branches and the formation of fruit buds. The object of penning this passing thought on a great subject is to stimulate others to bestow more attention on the physiology of pruning than can now be given by—A THINKER.

VIOLET COMTE DE BRAZZA.

ALL who wish to have a lovely sweet-smelling bunch of pure white Violets throughout the winter and spring months should grow Comte de Brazza. The individual flowers of this variety are large, and produced in great profusion on long stout stalks. For culture in pots I have never seen any Violet to approach it. It covers itself with bloom, and all who have a greenhouse should grow it in pots for decorative purposes. My experience has been that in growing Violets for greenhouses and dwelling-rooms it is best to have them all the season in pots instead of planting out and lifting. They should be grown from single crowns in rich soil, plunging the pots in summer in some light material in a border with a west aspect.—D. THOMSON, *Drumlanrig*.

GRAPES KEEPING

In our late house we have the following varieties of Grapes, but this is the first year we have had an opportunity of comparing their keeping qualities, as last season was their first fruiting, and the few bunches were used before Christmas. The first to shrivel was Alnwick Seedling, closely followed by Alicante and Muscat of Alexandria. Lady Downe's showed signs of shrivelling the first week in January, whilst Gros Guillaume and Gros Colman were still plump. The two latter and Golden Queen, that ripened in August, were sent to table the second week in January. The Queen was much shrivelled, but the others were without a wrinkle.

Alnwick Seedling set so as to require heavy thinning, but in colour and bloom it was perfect. No other black Grape here had such a striking appearance. The bunches were well shaped and weighed 2 lbs. What should cause Lady Downe's to give way before Gros Guillaume is inexplicable to me. The latter does not keep well here in bottles. The shoulders and branches turn brown and they fall when the bunches are moved, but the berries remain plump, or moderately so. I have also noticed a bunch or two on the Vine that had to be cut very carefully. This, I presume, is not the fault of the Grape any more than Lady Downe's is at fault in not keeping, for some have the latter as late as May where they have superior accommodation for preserving it. The bunches we have of it were cut the 20th of January and placed in bottles, and it will be scarcely good in the middle of March. A bunch left in the leader of the Vine remains in the same condition as it was six weeks ago, and it has had to take its chance with a houseful of plants. The structure which has to do duty for a Grape room is unavoidably warm—50° to 55° if closed—so I am compelled to have the window continually open. Gros Colman bottled at the same time as Lady Downe's was quite plump until a fortnight ago, and I fear will hardly keep to the end of March. This is

such a favourite with my employer that if I grew no other I should so far give satisfaction. He has commented upon its noble appearance in terms of praise, and on my remarking that its flavour was inferior to many others that had been sent to table, he replied that he "attached but little importance to that, as he was sure all his guests had eyes, but he was not so certain about their taste." How applicable that remark may be it is not for me to say. It is, however, proverbial that tastes differ. We have also ample evidence that for one who partakes of dessert there are half a dozen that do not.

In most establishments the consumption of fruit is regulated by the prevailing age of the diners. A family or party whose members are young will consume much more than the same number more advanced in years, and amongst the first the criticism is less severe, one Grape being deemed as good as another.—W. P. R.

THE AUSTRALIAN HONEYSUCKLE.

THE Banksias are a peculiar genus of plants, the species forming which contribute largely to the native vegetation of New South Wales and other districts in the great Australian continent. These plants with their relatives the Proteas were at one time much grown in large establishments in England, but of late years they have been almost lost, and are now seldom seen except in botanic gardens. Some are perhaps more strange than beautiful, but there are several which are by no means devoid of attractions, and would add to the interest of many gardens. Of these



Fig. 33.—*Banksia integrifolia* (reduced).

the Australian Honeysuckle (*Banksia integrifolia*) is especially noteworthy as a free-growing and floriferous plant, which recommendations are not possessed by all its allies. The popular name appears somewhat far-fetched, as are many other popular names; but it does not refer to the habit of the plant as might be supposed, but to the quantity of nectar secreted in the flowers. *Banksia integrifolia* is a shrubby plant, usually of moderate size in cultivation, but attaining much greater dimensions in its native land, where some of its near relatives rise to the height of 50 feet. The flowers are yellowish in a cylindrical head at the ends of the branches, as is shown in the woodcut (fig. 33), which is a reduced representation of a small flowering branch. The leaves are narrow and undivided, dark green, and firm in texture.

The plant succeeds in light turfy loam and peat, and requires only the temperature of a greenhouse or conservatory, supplying water carefully when not in flower.

LORD NAPIER NECTARINE.

THOSE who write in favour of this imply that I have not the right sort, but as I have seen it repeatedly at shows and in different gardens I know it well, and I am sorry to say our tree, which produces fruit of fourth-rate quality, is really Lord Napier. It may be that it does not succeed so

well in a cool house as a warm one, and yet I cannot see that this should make much difference, as we can hardly admit of a house being cool in July or August—months in which fruits generally assume their best qualities. I believe, in the majority of instances, this Nectarine is only kept on for its handsome size. It is certainly a very black mark against it that it should be thrown out at Drumlanrig, as it is well known that splendid results attained in the culture of such fruits at Drumlanrig. Mr. Lewis, p. 146, makes a note of its value in America; but although he professes to be all in its favour, he gives in to my idea of it more fully than I could have expected, as the "second-rate flavour" which he says it possesses is what I object to. I would like to ask Mr. Lewis and other Napier partisans why they should grow or recommend a Nectarine only second-rate in flavour, when "first-rate" flavoured ones require no more space or culture to bring them to perfection. A first-rate Nectarine is a most delicious fruit; an inferior one is very unsatisfactory.—*J. MUIR, Margam.*

SELECT ANNUALS FOR STOVE AND GREENHOUSE.

MARTYNIA FRAGRANS.—This resembles, and is nearly related to the more popular *Gloxinia*. It belongs to the natural order Pedaliaceæ, and is one of the handsomest of the genus, which consists of seven or eight species. *M. fragrans* is a native of Mexico, and was introduced in 1840, and the genus is named in honour of the late Dr. Martyn, formerly Professor of botany at Cambridge. *Martynia fragrans* is of robust habit and easy culture, and being an annual there is no anxiety attaching to it in regard to keeping it through the winter, as is the case with the tubers of the *Gloxinia*, and anyone possessing a hotbed and greenhouse, or either of the two, may cultivate it successfully. The general appearance of the plant is of a strong and bold character, possessing slightly glutinous hirsute stems and foliage. The flowers are axillary and terminal, exhaling a delicate fragrance. It seeds freely, and the pods are curious in shape, and are sometimes pickled, but of this I have no personal experience. Though the flowers are not so durable as those of the *Gloxinia*, their abundance amply compensates for their short duration.

The seeds may be sown at any time according to the season it is desired to have them in flower, but from February to April is the most general time for the purpose, and the plants will flower from June to October if their requirements are properly attended to. In sowing place the seeds, which are very large, about 3 inches apart, using soil similar in character to that recommended for *Thunbergias*, and cover with an inch depth of soil. Give a good watering through a rose, and place them in the warmest position at command. As soon as the seedlings have developed their first pair of ordinary leaves let them be carefully transplanted singly into 48-size pots, using a compost of loam and leaf mould in equal parts, and a little manure and sand added. Place them again in a growing temperature as near to the glass as possible in order to encourage a sturdy growth. Give them good supplies of water, and in about three weeks they will be ready for transferring into 32 or 24-size pots, but in most cases the former will be large enough. At this potting use loam, leaf mould, and manure in equal proportions, and add sand according to circumstances. Make the soil around the old ball moderately firm, and replace them in their growing quarters until the blossoms appear, when they should be moved into a cool and shady position. Unless it is particularly desired to retain the seed pods they should be picked off, because they rapidly develop and will exhaust the plant proportionately.

CELOSIA PYRAMIDALIS—This plant belongs to the natural order Amaranthaceæ, and is allied to the *Alternanthera*, *Amaranthus*, *Iresine*, and *Gomphrena*, all popular occupants of our gardens. The genus embraces about twenty known species and varieties, two of which are evergreen shrubs, and the remainder stove and greenhouse annuals, mostly natives of the continent of Asia. The popular and well-known Cockscomb (*C. cristata*) is a member of the genus, and was introduced from Asia so long ago as 1570. There appears to be some doubt as to the date of introduction of *C. pyramidalis*. Sweet, in his "Hortus Britannicus," gives 1714, whereas Johnson's Dictionary states 1820; however, both are agreed as to its native country—viz., East Indies, and in any case the plant is not a stranger in this country now. The cultivation is very simple. Seed should be sown about the end of March or the beginning of April in a light compost, and covered with not more than half an inch depth of the same soil; give a good watering through a fine rose, and place on a hotbed or in a stove, or, failing either, in the warmest part of the greenhouse, and as the seedlings grow keep them near to the glass, gradually increasing the supply of

water. When the plants have developed three or four leaves let them be carefully transferred into small pots, using a compost of a light rich character, such as equal parts of loam, leaf soil, dried cow manure, and sand. Return them afterwards to a warm and moist atmosphere, and as near to the glass as possible. Shade them only to prevent flagging or scorching when the sun is bright. In about three weeks they will be ready for repotting, and unless large specimens are required pots 6 inches in diameter will be large enough for all ordinary purposes, and at this potting see that the drainage is as perfect as possible, for when the pots become filled with roots copious supplies of water and occasional stimulants will be required. The soil should be richer and more durable, and pressed firmly at the final potting. Let the plants be kept in warm quarters until their beautiful plumes are developed, when they should be placed in a cooler position, such as an ordinary conservatory, where their varied colours will be acceptable, and their plumes give a welcome variety of outline.

TORENIAS.—The next plants to which I wish to draw attention are the *Torenia*s, and all those who admire the perennial *Torenia asiatica* will also appreciate the equally beautiful annual species *T. Bailloni* and *T. Fournieri*. The flowers of the former are yellow with a purple centre, and those of the latter species are a blue, somewhat resembling *T. asiatica*. The genus belongs to the natural order Scrophulariaceæ, and consequently is allied to many of popular garden flowers, such as the Foxglove, Snapdragon, Toadflax, *Mimulus*, and *Calceolaria*. Like *T. asiatica* the species under notice are as well adapted for culture in baskets as for pots, being of a pendant habit. The leaves are small, and produced in pairs, the flowers springing from the axils of the leaves.

All the species in cultivation are impatient of stagnant moisture at the roots, but at the same time they all require abundant supplies of water, consequently it is necessary, in order to achieve even a moderate share of success, to secure perfect drainage and use an open soil.

The seed, which is very small, should be sown early in spring in pots or pans that are well drained, and containing 2 or 3 inches depth of fine soil made level, and watered through a fine rose previous to sowing the seed. If it is decided to cover the seed with soil great care must be exercised in doing so, but anyone who is accustomed to raising *Lobelias*, *Celery*, and herbaceous *Calceolarias* from seed will not be likely to err on that score. In my own practice I find it the best to never cover very small seeds with soil, but after sowing I cut a piece of newspaper to fit the outside diameter of the seed pan, and then press it gently down on to the surface of the soil, and thus leave a margin standing up all round and close to the sides of the pan, and if the pan is stood level, as it ought to be in any case, the water which is poured on the paper remains thereon and keeps the soil underneath constantly moist, and not a seed is disturbed. As the seedlings appear the paper can be removed at will, and replaced to shade from the sun or too strong a diffused light.

Water the young *Torenia*s previous to transplanting them, and, as with *Thunbergias* during growth, frequent syringings will be beneficial, and will keep red spider in check. Should black thrips appear, light and frequent fumigations will destroy them, but an extra strong dose of tobacco smoke would, in all probability, be as fatal to the *Torenia*s as the thrips. The annual *Torenia*s are the most difficult plants to rear and cultivate of all that I shall mention in this paper; and if amongst my readers there are any amateurs who can boast of never having failed with any plant they have yet taken in hand—and I know one or two who can truthfully say as much so far—to them I heartily commend their culture, and if they only succeed in raising and flowering 10 per cent. of the seeds sown, they will be amply repaid for their trouble.

THE ANAGALLIS.—Another pretty little plant suitable for the decoration of the greenhouse. Three or four species are annual, one or two biennial, and the remainder perennial. The genus belongs to the same natural order as our lovely Primrose and the pretty Cyclamen—viz., Primulaceæ. The scarlet Pimpernel (*Anagallis arvensis*), is also known as the Poor Man's Weather Glass, and Shepherd's Barometer, the flowers closing on the approach of rain. Besides *A. arvensis* we have *A. cœrulea* (blue), and *A. carnea* (flesh colour), from Switzerland, and *A. indica* (blue), from Nepaul. The four varieties will grow and flower freely if sown in the open border, they are also well worth a place in the greenhouse. Sow the seeds where they are intended to remain, either in pots or narrow boxes, using soil of a medium texture and not too rich. Place the pots or boxes in the greenhouse, and as soon as the seedlings are

large enough to handle thin them to 4 or 5 inches apart, according to the strength of the plants, and water as required.

DIDISCUS CÆRULEUS AND D. ALBIFLORUS.—These are New South Wales plants, bearing cærulean blue flowers and white flowers, as their specific names imply. They were introduced into this country in 1820 and 1827 respectively, and belong to the large natural order Umbelliferae, being frequently classed under the generic name *Trachymene*, a genus comprised chiefly of dwarf shrubs, natives of the same part of the globe, and belonging to the same natural order. The *Didiscus* are hardy annuals, but do better when cultivated in pots under glass, and if sown at the end of March or beginning of April, pricked off, and potted as required—pots 6 inches in diameter being large enough—they will produce their charming umbels of blue and white throughout the summer, and will be very effective amongst other plants. Ordinary details of cultivation will produce successful results.

BROWALLIAS.—In the genus *Browallia* we have several very pretty and useful greenhouse annuals of an erect and shapely habit, and very floriferous in character. The different species produce flowers of various colours, from pale yellow to purple, but those more worthy of general culture are *B. elata* (blue), introduced from Peru in 1768, *B. elata alba* (white), *B. elata grandiflora* (blue), and *B. speciosa* (purple) from Quindiu in 1846. The genus is named in honour of the late John Browallius, Bishop of Abo, in Finland. Seed should be sown during the spring months, the earlier the better, in light and moderately rich soil, and placed in a frame on a gentle hotbed, or in the warmest part of the greenhouse; cover the seed very slightly with soil, and keep it moist by means of the paper and water until germination takes place, when the seedlings must be gradually inured to more light, and the paper removed. As soon as large enough prick off the seedling 2 inches apart into pans or boxes, or singly into small pots, 60's will be large enough. Keep them growing sturdily by giving them a position near to the glass and a warm and humid atmosphere. In three or four weeks they will be ready for placing into the pots in which it is intended to flower them; these need not be larger than 4½, 5, or at the most 6 inches in diameter. At this potting use a compost of loam, leaf mould, manure, and sand in equal proportions, and see that the pots are well drained; place them again in the most suitable position to insure a free and sturdy growth, and as they come into flower remove to a cooler and more airy position.—J. U. S.

ESPECIALLY TEAS.

It would have been decidedly interesting if "D., Deal," had kindly given us, as I think he probably could have done, the number of entries in the various classes for Teas at the National Rose Society's exhibitions. If the entries during the last five years have steadily increased in numbers it would be a distinct argument for extra encouragement to Teas. It is not of much moment to tell us that the prizes for six suburban-grown Teas have never enlisted a single competitor, or do I mistake, "have never been awarded," because unworthy? If this latter be the explanation, I should not be surprised, for seeing how completely ruined a bloom of Tea may be by a "black" alighting on it, and that "suburban districts" have an unlimited allowance of the same, no one could marvel. There is also another reason, I think, that the smoke has a greater injurious effect on the smooth Tea foliage, thus preventing vigorous growth, otherwise the neighbourhood of the metropolis, being decidedly a better climate than this portion of the country, should be more favourable to the growth of the more tender (Tea?) varieties.

The point to get at is, Are Rose-growers, who formerly contented themselves with a few Teas, growing them to a greater extent? If so, and if at the same time the number of Tea exhibitors have increased—and our good friend "D., Deal," is better qualified than most men to judge of this matter—then augment the encouragement; at least, a strong case is made out for the same. Thanks to Mr. G. Prince, whom all Rose lovers will rejoice to hear is getting about again, and the stock which he has made famous; and thanks, too, to Mr. G. Paul's idea of the raised beds, I believe there are more Tea Roses grown, and if so, there will soon be brisker competition, and doubtless schedule framers will offer accordingly.

With the latter portion of "D., Deal's" communication I have much sympathy, but the subject is a very difficult topic to handle satisfactorily. An enthusiastic amateur of the strictest integrity may be anything but a pot-hunter, and yet he may feel, as I confess I do, that I ought to make my hobby pay. Now, if I do not exhibit, my hobby pays me fairly; first, in the great pleasure of watching growth and criticising their varied merits; secondly, in the still greater pleasure of giving away, and I may thus consider that I ought to be satisfied. But if I exhibit, especially at a distance, I am immediately launched into a series of expenses, incidental, not to the growth but to the exhibition of my pets. I think I am fairly justified, without being considered a pot-hunter, in endeavouring by all honest means to make the results of exhibition pay expenses at the least. The gilding to the honour of winning is like a suitable frame to a good

picture—it sets it off, and I can see no harm in cutting my coat according to my cloth, or, in other words, exhibiting to my best advantage.

"D., Deal," has, however, unintentionally overlooked another reason for entering in several classes, and possibly only exhibiting in one, that in small collections of from 600 to 1500 plants—three or four days possibly intervening between date of entry and exhibition—an exhibitor cutting well on Tuesday may be unable to cut a dozen exhibition blooms on Friday. I think it not improbable that the National Society's rule, which compels entering instead of exhibiting, deters some exhibitors from entering in the larger classes from the fear that with their small collections they may not be able to cut accordingly.

Where a Rose Show is held as a commercial speculation it is, I had almost written, every way an evil. I, too, have known a Mushroom exhibition with its £20 prize. It has long been a thing of the past. In small societies it is, I think, a very good plan to let each member only take one of a certain number of prizes; he may be awarded the honour of a "double first," or more even, but he can take only one prize, whilst the others are passed on to other members, and these—at least, some of them—go away the happier, or their gardeners may. I have always, in every kind of competition, advised a number of prizes rather than one grand premium. In this respect the National, with four prizes in several classes, sets an example that deserves to be followed as well as to be successful.

In our local Rose Society we have certain prizes for four or five classes of any variety. In these each member can only take one prize; then we have some extra classes, the prizes in which may also be taken by the exhibitors who are successful in the other classes. Amongst these we have for some years had a class for a few Teas and Noisettes. I must add that the competition in this class has very decidedly increased, and there are signs this planting season of future increase. Anyway, I think all the Committee are agreed that class must be kept on the schedule.—Y. B. A. Z.



THE schedule of prizes and arrangements of the ROYAL HORTICULTURAL SOCIETY for the present year is now to hand, and the programme it announces is most satisfactory and varied. In addition to promenade shows at the fortnightly meetings in March and April, a series of special exhibitions has been arranged from May to October, which will provide a continuous succession of floral attractions throughout the season. On April 21st the National Auricula Society's Show will be held, and this will be followed on May 12th and 13th by the Orchid Conference. Roses in pots and Azaleas will be the features on May 26th; Orchids, June 9th; Pelargoniums, June 23rd; the National Rose Society's Show, July 7th; Flowers and Fruits, July 14th; Begonias and National Carnation and Picotee Society's Show, July 28th; Plants and Flowers, August 11th; Cottagers' Show, August 25th; Grapes and Dahlias, September 8th and 9th; Apples and Pears, October 13th and 14th; Chrysanthemums, Vegetables, and a Potato Conference, October 27th and 28th. At these special shows prizes varying from £15 to 5s. are offered, and after such a successful series of fruit shows last year similarly satisfactory displays of plants may be confidently expected.

— MESSRS. J. CARTER & Co., High Holborn, send us samples of about two dozen varieties of PRIMULAS, the majority of which are distinguished by their good form and substance and their bright varied colours. There is now an excellent display of these plants in Messrs. Carter's Perry Hill Nursery.

— THE GREAT CATTLEYA HOUSE in the nurseries of Messrs. James Veitch & Sons at Chelsea is now magnificent. This is undoubtedly one of the finest Orchid houses in the world, and the plants both by their health and beauty are worthy of the structure. The Orchids at Chelsea merit further notice, but in the meantime persons who wish to see something worth seeing should lose no time in inspecting the house in question, as many fine plants are being purchased daily, and several of the flowers of those remaining will soon lose their freshness. Thirteen hundred Cattleyas were in full beauty when we admired the collection a few days ago.

— AMONG the NEW ORCHIDS that happened to flower in the same nursery at the time of our visit were the following:—*Lælia bella*, a seedling from *L. purpurata* × *Cattleya labiata*. The colour is intensely rich, the lip purple maroon, shading to the edge, sepals pale mauve, yellowish-veined throat. The flower is highly fragrant, and the plant vigor-

ous. This is the first time of its flowering, the seed having been sown in April 1874. *Dendrobium micans*, a charming variety from *D. Wardianum* × *lituiflorum*; lip very handsome by its solid blackish purple blotch surrounded by a pure regular band of ivory white, and tipped with lilac, petals and sepals blush suffused with lavender. *Cypripedium Sedeni candidibulum*, this is the most delicately beautiful of the section; sepals and petals nearly white, lip pale rose. It is the result of a cross between *C. Schlimi album* and *C. longifolium*, and being an excellent grower, and evidently a free bloomer, is sure to become a great favourite.

— WE have received a circular issued by Mr. E. S. Dodwell, in which he proposes to form a Society at Oxford, to be called "THE OXFORD UNION CARNATION AND PICOTEE SOCIETY." The necessity for which, he states, is that "the growers of these flowers in a widely extended area having hitherto been virtually excluded from competition, the period of bloom being unsuitable alike for the exhibitions of north and south." The way in which this "Union" is to be started and the preliminary expenses raised is by the sale of Mr. Dodwell's surplus stock of Carnations and Picotees. He has issued a priced list of these, and purchasers of plants may receive as a bonus on their purchases a membership in this Union, by having forwarded to them "full value for their subscriptions." Since growers in Mr. Dodwell's area, as he asserts, are virtually excluded from competition in either of the exhibitions of the north or the south, the formation of this Union appears to be intended to suit the convenience of those who live within a short radius of the city of Oxford. We read that every subscriber will be entitled to a voice in its management, but we have not yet received any list of the executive or copy of the rules.

— MESSRS. WILLIAM PAUL & SON, Waltham Cross, will make a special EXHIBITION OF CAMELLIAS in pots in flower at the next meeting of the Floral and Fruit Committees at South Kensington on March 10th.

— WE regret to learn the death of MR. JAMES KENNEDY of Comber, County Down, which occurred on the 14th inst., at the comparatively early age of thirty-six years. Mr. Kennedy was an occasional contributor to both the garden and bee departments of this Journal, and his communications indicated that he was a close observer and highly intelligent. We also know that he was in every respect a most worthy man. He was gardener to the late John Miller, Esq., for fourteen years. He leaves a widow and three children, but we are glad to find they are not wholly unprovided for. The cause of death was consumption.

— WE have received a copy of the second and enlarged edition of Messrs. Sutton & Sons' work on gardening—"THE CULTURE OF VEGETABLES AND FLOWERS FROM SEED AND ROOTS." We are not surprised that this work has met with such ready acceptance. It is sound, useful, and instructive; a handy volume of reference to cultivators generally, and a safe and serviceable guide for amateurs who need information on the various subjects on which it treats.

— MR. JOSEPH MALLENDER sends the following SUMMARY OF METEOROLOGICAL OBSERVATIONS AT HODSOCKPRIORY, WORKSOP, NOTTS, FOR FEBRUARY:—"Mean temperature of the month, 41·9°. Warmest day, the 27th; coldest day, the 21st. Mean temperature of soil 1 foot deep, 40·3°. Number of nights below 32° in shade, seven; on grass, eleven. Total duration of sunshine in the month, 38·5 hours, or 14 per cent. of the possible duration. The brightest day was the 24th. We had nine sunless days. Total rainfall, 2·19 inches. Maximum fall in twenty-four hours on the 16th, 0·56 inch. Rain fell on eighteen days. Wind principally from south and westerly points. A very mild month except for a week of cold weather, from the 15th to the 22nd. The mean temperature is higher than last year, and slightly lower than the two previous ones. The rainfall is more than last year, but less than 1883. The sunshine is considerably less than the last three years, though a little more than in 1881."

— AT Messrs. Protheroe & Morris's special sale of Orchids in flower, last week, a plant of the rare *CŒLOGYNE CRISTATA ALBA* was after a keen competition sold to Mr. W. Bull of Chelsea for £131. The plant has seven flower spikes, the blooms being snowy white without the least shade or tint.

— "G. A." sends the three following notes:—"Outdoor flowers are not numerous in February, therefore *LONICERA FRAGRANTISSIMA* is a welcome addition, more especially as it is fragrant, having the charming perfume of Honeysuckle. It is not a rambling grower like some of the genus, our plant not being more than 3 feet 6 inches high,

but it has only been planted two years. The flowers are borne in clusters somewhat small, but are very pretty and creamy white in colour, the shrub being covered with the flowers, borne on the wood of the previous year. It is grown against a wall with a south aspect, the soil being light, rich, and well drained. I think it would be a very desirable plant in pots, as its early flowering and delicious fragrance would be certain of appreciation."

— "ANOTHER shrub worthy of note is *JASMINUM NUDIFLORUM AU-REUM*, which not only differs from the species in having yellow foliage, but the flowers are borne in even greater profusion, are larger and deeper in colour. It is also stouter in growth and not so prone to ramble as the species. Plants of *J. nudiflorum* are nearly past on sunny aspects, whilst those on north walls were only coming into flower at the close of February."

— "OF the much-valued and beautiful EARLY SPRING FLOWERS, especially Snowdrops and Crocuses, we have a line on both sides of a walk about half a mile long, and these with *Scilla sibirica* are charming. Violets are flowering freely, even the Neapolitans have a profusion of blooms. Primroses are advancing, and the early flowers promise to be fine this year, also border Auriculas, if the sparrows will leave them alone, for last year they tore the pips into shreds. The only way to keep them off is to run some strings of black thread about 4 inches from the ground. The finest plant in the herbaceous border at present is *Helleborus colchicus*; its branching stems bearing large heads of bright glossy purple flowers are very effective."

— A CHARMOUTH correspondent writes respecting the PROSPECTS OF THE SEASON:—"Everything is getting dangerously forward here. Pear blossoms of Jargonelle, Louise Bonne, Doyenné d'Été, and one or two other kinds are quite swollen and showing white in my kitchen garden, and the orchard house, "unheated," is beginning to look pink from the Peach and Nectarine buds."

— A COMMITTEE has been formed with the object of collecting evidence in reference to the DOUBLING of *NARCISSI*, Dr. W. H. Lowe, Woodcote, Wimbledon, being the Secretary, and the Committee comprises fifty-two persons specially interested in the *Narcissus*. A meeting will be held in the Lindley Library, South Kensington, to consider the following suggestions as to the work to be undertaken:—1, Collect and sift the evidence offered by various observers as to the "doubling" or "going single" in their gardens. 2, If any cases seem to afford *prima facie* evidence of "doubling" or "singling" in this or that garden, take these as "experimental stations." 3, Draw up a list of regulations for carrying out an experiment, such as—(a) Bulbs in flower this spring to be marked for experiment this summer as single, double, &c. (b) The ground experimented on must be assured to be free from Daffodil bulbs. (c) Precautions for securing that the labels do not get separate from bulbs, &c. 4, It will be as well that the character of the bulbs experimented on, and the result, should be attested by more than one member of Committee. Possibly it will be desirable that some of the Committee should go down and plant the bulbs in the experimental stations. 5, Besides the operations carried on at experimental stations in localities said to have the power of doubling, &c., some sets of marked bulbs should be planted at Chiswick under experimental conditions, and possibly in other places, where they can be watched by the Committee.

— "D. M." writes:—"CROCUSES FOR CONSERVATORY USE.—The large conservatory at Melville Castle is at present very gay with a fine array of Camellias, Hyacinths, and other forced plants, their beauty being still more enhanced by Crocuses planted out. Round the border in which the fine Camellias are planted is a small rockery, and in it the Crocuses were planted in a light but moderately rich soil. They are now flowering, and well repay for the trouble bestowed upon them."

— ANTWERP UNIVERSAL EXHIBITION.—A liberal programme of shows in the horticultural department of the above Exhibition has been issued, from which we learn, that in addition to a permanent exhibition of ornamental trees, shrubs, and flowering plants in seventy-nine classes, which will be open from May 2nd to October 31st of the present year, four other shows will be held as follows—May 10th to 12th, Azaleas, Orchids, Rhododendrons, Roses, and miscellaneous plants, thirty-three classes; June 28th and 29th, for cut Roses, nineteen classes; August 2nd to 6th for a general exhibition of plants and flowers, 132 classes; September 27th to 29th, for fruits, vegetables, bouquets and Dahlias, fifty-three classes. In these classes the prizes will consist of gold medals, value 200 and 100 francs, silver-gilt, and silver medals. The exhibitions are

under the patronage of the King of the Belgians, who contributes several valuable prizes. All the principal Belgian horticulturists are connected with the management of the shows, and there is every prospect of a busy season in Antwerp.

— THE schedule of the MANCHESTER WHITSUNTIDE SHOW, which is to be held in the Gardens of the Royal Botanical and Horticultural Society of that city at Old Trafford, as usual comprises a number of very liberal prizes. Orchids are especially well provided for both in the amateurs' and the nurserymen's classes, the prizes ranging from £16 to £1. Fine-foliage plants, stove and greenhouse plants, Azaleas, Ericas, hardy plants, Pelargoniums, have also numerous classes devoted to them.

— A VISITOR sends the following respecting the ORCHIDS AT SHIRE-CLIFFE HALL, SHEFFIELD, which are under the charge of Mr. James Udale:—"The *Phalænopsis Schilleriana* mentioned in the Journal last spring has had this season a branched panicle with over forty flowers, and is also supporting a young plant on an undeveloped flower-stalk. A lateral bud below the plant has broken, and is now producing four or five buds. This plant has four leaves, averaging 16 inches in length and 4 in width. A companion plant to this has five leaves, averaging 12 inches in length and 4 in width. This is also bearing a young plant, and produces a panicle of between thirty and forty flowers. In the same house is now flowering a good specimen plant of *Dendrobium fimbriatum* var. *oculatum*, bearing thirty panicles of its bright yellow and crimson-spotted flowers, the beauty of which can be readily imagined. Several large specimens of *D. nobile* and *D. nobile* var. *Wallichii*, 4 feet in diameter, have been loaded with flowers, and the strong well-ripened pseudo-bulbs of the past year's growth promise even a more glorious harvest next season. A large specimen *Calogyne cristata* has produced thirty racemes of its lovely white flowers. The pseudo-bulbs of this fine specimen are 4 inches in length and nearly 5½ in horizontal circumference. The length of the foliage is 17 inches and in breadth 1¾ inch. There is also a good display of spring flowers, such as Cyclamens, of which one plant in a 6-inch pot has seventy-five flowers, Camellias and Hyacinths."

CULTIVATION OF THE CHRYSANTHEMUM.

[The substance of an essay read at the last monthly meeting of the Lincolnshire Gardeners' Association by Mr. A. Wipf, gardener to N. Clayton, Esq., of East Cliff, Lincoln.]

WHETHER to the cottager or artisan, amateur or professional gardener few plants will give greater pleasure or cause more enthusiasm than the Chrysanthemum well grown, but the Chrysanthemum cannot be grown to perfection on the letting-alone principle. I have heard people say—and even gardeners too—"Oh, I do not grow them for fine flowers, but for cutting." To me this way of reasoning is incomprehensible, for cannot fine flowers be also used for that purpose? Half a dozen of the latter will give greater pleasure and cause more attraction than a whole armful of inferior flowers; for I contend that whether we grow a Chrysanthemum, a bunch of Grapes, a crop of Peaches, or anything else that a gardener has to provide, one perfect specimen is worth fifty indifferent ones.

But to my subject of growing those large flowers that you have seen at recent exhibitions. Commence, then, by choosing strong, sturdy cuttings, or what is a better name, suckers, which should be about 2 inches high. Do not cut them off above the level of the soil, as is so often done, but get down in the soil as low as possible, as in cutting Asparagus. Many will probably be already provided with white bristling roots. Insert them singly in 2-inch pots, in a mixture of half leaf mould and half loam, with a fair portion of sand added; make the soil tolerably firm in the pots, finishing off with a dash of sand on the surface, and place them near the glass in a cold frame, kept air-tight, where frost can be excluded. I put mine in a frame between the rows of *Calceolaria* cuttings, and do not lose more than 2 per cent. A good watering is given immediately they are put in, and they must be constantly kept moist. Chrysanthemums require more water in the cutting state, as well as afterwards, than many people are aware of. Great difference of opinion exists as to what time is the best for striking the cuttings, but, speaking from my own experience, it matters very little so long as you get them rooted by the beginning of April. Some of my best flowers exhibited this year were from plants not struck till that time. I take all the cuttings that are ready during December, but any that are not ready I patiently wait till they are, sooner than put in lanky weakly growths, which never would produce fine flowers. Should any plants have a number of cuttings above 2 or 3 inches high, cut them off level with the soil and wait for the next suckers that will issue from the soil, digging them out as previously advised. Some varieties are rather shy in producing suckers, and in that case recourse has to be had to stem cuttings, which are never so good as those that issue direct from the soil; the best stem cuttings are those nearest to the soil.

As soon as they are rooted they should be taken out and placed in a cold frame, where abundance of air can be given whenever the temperature is above freezing point. The lights should also be taken off on all favourable occasions. Before we come to the next potting let us consider for a moment for what purpose the plants are required. If for exhibition, or where fine large flowers are appreciated, as they should be in every garden, make up your mind how many of each variety you intend to grow. Let one half grow on naturally, and, with a penknife, take out the centres—the merest point—of the other half. From the growths that issue select the three strongest to train up. I have two reasons for doing this. In the first place

it reduces their height, and, secondly, by having two sets of plants differently treated you are sure to get some of the buds in at the right time, which is a very important point. In the case of plants intended for specimens they ought also to have their points removed when 6 inches high, but I will deal with the after-treatment later on.

By the middle of March they will require shifting into 5-inch pots. I use a compost of three parts fibrous loam, one part of leaf soil, one part of well-decayed manure free from worms, with a sprinkling of sand, wood ashes, soot, and bonemeal. The pots are well drained with a layer of fibrous turf over the erecks, and the soil is firmly pressed about the roots. They are then taken back to the frame (which is kept closed for a few days) and watered sparingly till root-action recommences. Air should be given freely on all favourable occasions, and the lights removed whenever possible. They must on no account be allowed to get drawn, for upon the slow, sturdy, healthy growth they now make depends the future success of the plants. Whenever favourable weather sets in place them out of doors in a sheltered position where they can be protected from those nasty south-westers with which we are so familiar. They must never be allowed to suffer from want of water; once let that take place in a serious degree, the tissues dry up, the foliage collapses, and the stem prematurely hardens, with the result that the plant can never again perform its functions to the utmost of its capacity.

By the beginning of June commence giving the strongest plants their final shift into 8-inch pots. For such varieties as the Beverleys, Mr. Bunn, Princess of Wales, Mr. Heales and others 7-inch pots are quite large enough. The compost I use for the final potting consists of three parts of strong loam, one part of well-rotten manure, with a good sprinkling of soot, wood ashes, bonemeal, and old mortar broken small. A few pieces of the mortar placed amongst the drainage is also beneficial. Unless the loam is of a very retentive character I am no advocate for the use of sand for the final potting. It only impoverishes the soil, and I fail to see any advantage gained from its use for strong-growing plants like Chrysanthemums. But I do not place the composition of the compost as a matter of the first importance. It is the time the buds are taken and the feeding they get afterwards upon which results depend. As soon as the plants are potted, which should be done as firmly as possible, secure them to stakes 5 feet high, give a good watering, and place them in a position where they will enjoy the benefit of the sun as much as possible. It will both save watering and keep the roots at an equal temperature if the pots can be partially plunged, or ashes heaped round them. Attention is necessary to secure them to the stakes as they advance in growth, and so as to prevent them being blown about by the wind.

Before I go to the subject of disbudding and feeding I will take in hand the plants intended for specimens. The cuttings are struck and the points are taken out when the plants are 6 inches high. When they have made a few fresh leaves pot them into 5-inch pots. When the fresh growths have made five or six leaves take out the point again and tie down the shoots towards the edge of the pot, securing them to the main stem beforehand with a safety tie so as to prevent splitting. To secure good-sized specimens there must be no delay, and not a single leaf should be allowed to grow that is not absolutely necessary to furnish the foundation of the specimen. I find, therefore, that greater progress is made by keeping these young plants closer than those intended for cut blooms. After liberal ventilation during the early part of the day it will benefit the plants very much to close the frame in the afternoon and give a copious damping down.

Well, the plants are now rooting freely in 5-inch pots. As soon as growth recommences give them another shift into 8-inch pots. Four to five leaves having been made take the points out again, tying them out if necessary. On the plants beginning to grow again shift them into 12-inch, their blooming pots. Continue pinching at every fourth or fifth joint till the middle of June for the large-flowered and Japanese and till the end of June for Pompons, after which the plants will be furnished with about sixty or seventy flowering shoots.

When they have received their final shift they are best placed out of doors in a sheltered position, at the same time well exposed to the sun. Ashes heaped round the pots will save watering, and in that position they should be left without any further attention as to tying or staking until the buds are set. After disbudding to one, two, or three on a branch, according to variety, a number of stakes, 2 feet 6 inches long, are inserted at regular intervals, and the branches are tied down with great care, bringing the outer branches to the centre and the inner ones to the outside row of stakes. Should they grow much above the points of the sticks the ties can easily be slipped down. Two important points connected with their culture are these:—Never pinch and shift at the same time, and be careful in watering after shifting until root-action recommences. The following are, in my opinion, the six most suitable incurved or large-flowered Chrysanthemums for specimens:—Mrs. G. Rundle, Mrs. Dixon, Prince of Wales, Christine, Mrs. Sharp, and George Glenny. The six best Japanese—Early Red Dragon, La Nympe, Peter the Great, Chinaman, Fair Maid of Guernsey, and Bouquet Fait. The six best Pompons—Brilliant, Bouquet Parfait, Antonius, Diek Turpin, Rosinante, and Golden Circle.

Since we have been attending the specimens, the others have grown apace; they were potted in June, have made rapid progress, and by the end of July they will have permeated the new soil. This, in my opinion, is the time when feeding should commence. I am well aware that many noted growers deprecate the use of liquid manure until after the buds are set, but please to recollect that I have been recommending their being potted into 7 or 8-inch pots, in which, I think, they are more under the control of the cultivator, and, therefore, any additional food they require can be given in the shape of liquid manure. The wood can also be better ripened in the smaller pots, especially in a wet summer. In commencing to feed the Chrysanthemum, it is a safe practice to let every third watering be weak liquid manure; either soot water or that prepared from cow manure is the best for a beginning. At the end of three weeks I give it at every second watering until the bud begins forming, and then discontinue it until the bud is safe. More buds are lost or disfigured by the use of stimulants during their formation than many people are aware of. As soon as the bud is formed and safe, commence to feed in earnest, gradually increasing the strength of the liquid until it is given as strong as the plants can take it. On the buds beginning to colour gradually decrease the strength of the manure till you get back to clear water. There is great diversity of opinion

as to what kind of liquid is the best. Anyone having the drainings from a cow-yard and stable at command will require nothing further. Fowl or pigeon manure is also good, but must be used with great caution. I have little faith in such nostrums as Standen's, Beeson's, or Clay's manures; they are no doubt good for some purposes, but what is wanted just now for the Chrysanthemum is a liquid that will act immediately on the plants. I will give you my receipt for a liquid that will work wonders. Take two bucketfuls of human excrement fresh from the vault, add two or three handfuls of soot, salt, and lime, tie the whole up in a bag, and put in a tub filled with water. Be sure and dilute it sufficiently when first using it. If it is objectionable or inconvenient to use such a manure, sulphate of ammonia will answer the purpose. Commence with quarter ounce per gallon, and gradually increase to nearly half ounce, in the same way decreasing it as you approach the flowering period. Every alternate watering with this liquid is quite sufficient. The above instructions as to feeding are applicable both to specimens and plants intended for fine flowers.

The next work is disbudding, which is, without doubt, the most important item in the cultivation of the Chrysanthemum. The feeding, although it takes the lead, is actually of secondary importance, but both it and the disbudding are so closely connected that, where high cultivation is desired, we cannot get on with one without the other. First of all you feed to secure a strong plant that will produce a well-developed bud; then the bud has to be supplied with the requisite nourishment to develop itself into a large, perfect flower. Chrysanthemums that are grown for the quality of their flowers are furnished with from one to three stems. About the end of June to the middle of July they will show what is termed the summer bud. This bud is useless. Several shoots are produced below it, from two to five of these being left, according to the strength of the plant and variety. These shoots being allowed to grow will each show another bud, which is commonly termed the crown bud; this is the bud to secure in our neighbourhood. Further south it is too early for all early-flowering varieties, hence a further growth has to be made, and the next or terminal bud taken. These flowers are more compact than those taken from the crown buds, but seldom so large. This crown bud is very small when first observed; it has three vigorous shoots round it, and two of these should be removed with a pen-knife as soon as they can be got at, leaving the other to grow for a while alongside the bud. If the bud develops itself satisfactorily, and requires the whole flow of sap into it, this shoot should also be taken away, likewise all laterals that form along the stem. All suckers should be removed as soon as they appear, otherwise they will throw the plants into an unhealthy condition, and appropriate the nourishment intended for the plants. The difficulty is to get the plants to show this bud at the proper time. Take three plants of any one variety, one will show the bud at the beginning of August, the second one at the latter end, and the third not perhaps until the latter end of September. We are completely at the mercy of the plants, but with a thorough knowledge of the varieties something may be done by early pinching to secure the bud at the proper time. Take, for instance, a plant that will not show its summer bud by the beginning of July. I would remove the centre, train up as many growths as desired, and they will then show the crown bud at the proper time, which for this neighbourhood—though a great deal depends upon the season—is about the latter end of August or the first week in September. Once you have the bud safe and in at the right time you may rub your hands and look forward to the contest with equanimity. Such late-flowering varieties as Grandiflorum, Meg Merilees, Boule d'Or, and others, will require the buds taken not later than the latter end of August. If, however, a bud of these varieties shows itself by the middle of the month, and it is seemingly perfect in all its parts, then it is a good plan to keep this bud.

We have now only to take care that no insects damage the buds. Ear-wigs especially must be constantly looked after and destroyed, or else they will soon destroy the plants. Green fly also becomes troublesome, especially in the early stages. Dust some tobacco powder on the points of the plants at night, and syringe off next morning before the sun has much power. The plants should also be syringed overhead every evening during dry weather. If mildew should make its appearance dust well with black sulphur on the other side of the leaves. If these directions are followed, and the plants have been properly treated from the time they left the cutting pot until now, they will reward us with fine masses of bloom at a time when everything else looks cheerless and dull.

AMONGST THE ORCHIDS. THE ORCHID CONFERENCE.

THERE is every reason to suppose that during the present year Orchids will reach the zenith of their popularity, for the promised Conference at South Kensington will undoubtedly attract most of the principal amateur and trade growers in Britain, whose choicest products will be staged to prove the claims of the family to popular attention. A unanimous feeling prevails that the scheme is highly commendable, and the only desire is apparently to assist in rendering it as successful as possible. This should produce results of a most satisfactory character to the projectors and all concerned. Already cultivators are selecting and preparing specimens for the great Orchid Show of the year, and desires are freely expressed that the northern growers will also give their aid in rendering it as representative as possible. At present it is, however, not definitely known what form the Conference will take, but it is presumed that orchidists will be invited to send all specimens of a remarkable nature, whether for beauty, rarity, or size. No prizes are announced, but probably cultural and other certificates will be awarded, and medals might well be added for plants of exceptional merit. It has been suggested by some that the expense of carriage will deter many from exhibiting, and that the Council would exercise a wise liberality in defraying expenses of this nature. Such a course would unquestionably induce many more to exhibit, and might be regulated so that it would not commit the Society to an undue expenditure, while if it ensured the success so much desired the outlay would be amply repaid. No doubt all these matters will be carefully considered in drawing up the programme, which should be issued

in good time to enable intending exhibitors to make the necessary arrangements.

It will also be interesting to know what course will be taken to render the gathering a scientific and educational as well as a mere spectacular success. This is a point of much importance, and suggests a means of collecting considerable useful information upon several subjects. For instance, if the exhibitors could be induced to briefly state the treatment adopted with rare or difficult plants, or any peculiarities either in culture or structure which they had observed, innumerable facts of great value might be collected, and would constitute a subsequent report of unequalled interest. In regard to hybrid Orchids much could also be done in tabulating the crosses effected, and where possible the parents and the offspring might be advantageously shown together. The nomenclature would form a difficult subject, but would certainly demand attention, and much-desired improvements might be arranged, especially if some check could be placed upon the undue multiplication of specific and varietal names, which is a growing evil that many deplore at the present time. In several other ways the members of the Conference could exercise the official power they will possess, rendering their labours of inestimable value to Orchid growers and lovers throughout Great Britain, and some useful work of this kind may be confidently expected.

ORCHIDS NEAR TOWNS.

Now that the population of the country is so densely massed in great centres it becomes a matter of importance to secure plants that will thrive in the neighbourhood of the smoke-producing cities, and probably the adaptability of many Orchids for culture in such positions has tended largely to increase their popularity. In the suburbs of most of our largest cities—Manchester, Liverpool, Birmingham, Sheffield, Leeds,

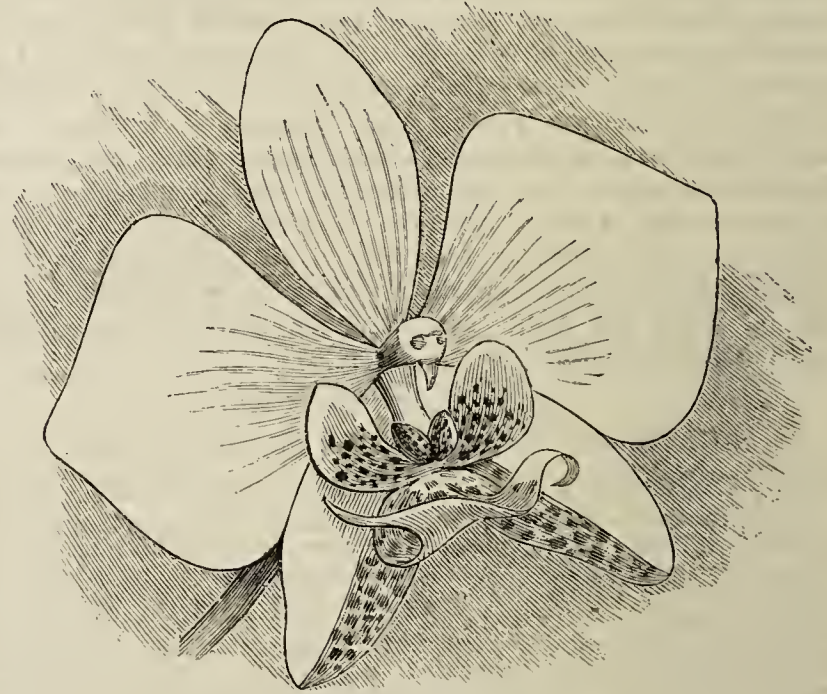


Fig. 34.—*Phalaenopsis Stuartiana nobilis*.

and the metropolis—collections of Orchids have been formed by wealthy merchants and others, in many cases of remarkable extent and value. Beyond these, smaller collections of cool house Orchids are very rapidly increasing in number, and the *Odontoglossum* house is becoming almost indispensable in many gardens. The dweller in towns certainly has more difficulties to contend with in the culture of Orchids than those who are favoured with a pure atmosphere free from the noxious smoke and fogs that prove so injurious to most plants. It is strange that the London nurseries, where Orchids receive special attention, are all within the smoke radius, yet visitors to those establishments are well aware of the cultural successes achieved in them. Some of the best grown Orchids that can be produced are there found, and amateurs have learned from this that in the suburbs, a few miles from the smokiest portions of the metropolis, they can readily satisfy themselves with a house of Orchids, and obtain their beautiful flowers with comparative ease. Many of these amateur growers frequent the sale rooms, purchasing both imported and established plants until their houses are filled or their purses exhausted; then some are sold, and occasionally the whole collection is disposed of, finding a home with other rising orchidists. There is thus a constant change, but there is no question that the total number of Orchid collections has increased very greatly in recent years, and this is seen in a marked degree around the metropolis. In almost every direction, but especially to the south and west, are gardens containing Orchids in varying numbers and interest, but all including specimens possessing some attractions, and where specialities are made of particular genera displays of surpassing beauty are frequently seen. Many who have not the opportunity of visiting these establishments will doubtless be glad to learn something respecting them, and with this object in view the following notes have been prepared, which will briefly describe a tour amongst the principal Orchid collections near London.

OLDFIELD, BICKLEY.

For many years F. A. Philbrick, Esq., Q.C., has been an enthusiastic orchidist, and during this long experience he has by close observa-

tion gained many hints that enable him to provide for the wants of his plants with the greatest exactness. In this he has been materially assisted by his gardener, Mr. Heims, who possesses a thoroughly practical knowledge of Orchid partialities, and carries it into execution with no mean measure of success. The houses are not numerous, and they are of moderate size, but they appear to suit the plants well, though there are several slight defects which are rectified as far as possible. One of the principles of the cultivation adopted at Oldfield is avoiding excessive heat and steaming houses, and providing ventilation freely and constantly whenever the weather is not unduly severe. Mr. Philbrick fully recognises the importance of Dr. Paterson's cool system, though he does not practise it to quite the same extent as that gentleman. Still, the result of this intelligent treatment is seen in firm growth, matured foliage, and abundant well-developed flowers borne by the plants. Another matter which receives attention there, preserving a moist and fresh atmosphere in all the houses. This is effected by having the stages covered with small gravel and shingle, in which small Ferns, Fittonias, Panicum, and similar plants are grown, and they quickly cover the surface, imparting to it a

possessing the gorgeous tints that distinguish the Cattleyas nor the bright hues of the Dendrobiums, Masdevallias, and many other plants, yet they have a beauty "all their own" that can scarcely be rivalled. Travellers describe in enthusiastic terms the charms of these plants in their tropical homes, where they cover the trunks and branches of trees with their handsome leaves, and produce their spreading panicles of flowers, which appear like so many delicately tinted moths with expanded wings. Perhaps Mr. Philbrick has read such descriptions and desired to produce an approximate representation of the scene, or perhaps he had no such romantic views, and merely wished to show what can be done with Phalænopsids when well grown. In any case, though he has not the giant trees of a tropical forest, the dense undergrowth, nor the innumerable other surroundings which render those scenes so remarkable to travellers from temperate climes, yet he has succeeded in obtaining a little "Paradise of Phalænopsids" that could scarcely be equalled even in those regions. How many superlatives have been used by visitors when conducted into this house it would be impossible to say—"charming," "wonderful," "superb," and similar expressions, accompanied by propor-



FIG. 35.—THE PHALÆNOPSIS HOUSE AT OLDFIELD BICKLEY.

most agreeable appearance, and retaining about their stems, roots, and foliage a constant moisture most beneficial to the Orchids over them. In pursuance of this practice the paths and spaces under the stages are in the warmer houses similarly open and moisture-holding; a cement path has been broken up to facilitate this, and open trellises are laid down for walking upon. By the adoption of a few simple rules of this character the supposed difficulties of Orchid culture are easily removed, and its practice rendered pleasurable.

The houses comprise a span-roofed range in two divisions, 35 feet and 45 feet long respectively, the former devoted to miscellaneous Cattleyas, Aerides, Vandas, Cyripediums, &c., the others being chiefly occupied with Cattleyas and Lælias, three-quarter span Odontoglossum house 50 feet long, and a Phalænopsis house with a porch and division about 30 feet long. The last-mentioned structure has during several weeks contained a remarkable display of flowers, and deserves a detailed description.

A PARADISE OF PHALÆNOPSIS.

The Moth Orchids, as the Phalænopsids have been expressively designated, surpass all their relatives in gracefulness, and though by no means

tionate notes of exclamation, have undoubtedly been freely employed; and, after all, words cannot do justice to such a scene, and we must have resort to the art of the engraver to convey an adequate idea of it. Thus, the woodcut (fig. 35) will aid me considerably in representing the attractions of this house. It is a small structure, and might almost be termed diminutive, span-roofed, about 20 feet long and 12 wide, the eaves very little above the ground level, and the path is below it. Upon each side is a stage covered with earth in which are growing abundant plants of the Silver-veined Fittonia (*F. argyroneura*) the metallic-foliaged *Cyrtodeira fulgida*, *Panicum variegatum*, and dense tufts of the Artillery Plant, *Pilea muscosa*, all growing luxuriantly. The roof is covered with a series of wires crossed diagonally, and from these are hung the Phalænopses at various heights, so that their drooping and nodding panicles appear to fill every space. The plants are all in baskets from 3 to 6 inches square, sphagnum, charcoal, and potsherds being the compost employed to retain the necessary moisture about the stems, the roots growing strongly over the wood and in the air. Sufficient means of ventilation are provided both in the roof and at the sides of the house under the stages, and the last-named are left constantly open except when the wind

is excessively keen. The stages with their dense covering of growth, the path, and the walls are freely syringed, but the plants are never moistened over their foliage, as the surroundings being suitably damped are amply sufficient. With attention to these matters, a temperature not falling below 60° at night, and care in not allowing the plants to be exhausted by retaining their flowers too long, have rendered Mr. Philbrick's Phalænopsids healthy and floriferous in an unusual degree.

All the principal species are represented, but the greatest portion of the display is composed of *P. Schilleriana*, *P. amabilis*, and *P. grandiflora*, of which there are scores of panicles, several with over dozen flowers each. Of *P. Stuartiana* there are also several good plants, while the superb variety of this named *nobilis* is very handsome. A flower of this is shown in fig. 34, the sepals and petals being pure white, except the lower halves of the two lower sepals and the lip, which have numerous reddish crimson spots, bold and rich in colour compared with other forms of this species. *P. Dayana*, pure white with crimson spots on the lip is pretty, and the small-flowered *P. rosea* is attractive. Several others are included in the collection, but these were all that were in flower at the time these notes were taken—late in February. Associated with the Phalænopses are several plants of the elegant and fragrant *Angraecum citratum*, which appears to excellent advantage in this way. There are nearly 300 Phalænopses, and over 200 panicles have been produced this season, though they were not all expanded at one time.

CATTLEYS AND LÆLIAS.

The Cattleyas include some grand plants of *C. Trianae* and its varieties of most varied colours and attractions, all flowering freely. *C. Backhousiana* is prominent amongst these for size, form, and colour of the flowers, and at once commands attention amidst the others grouped on one side of the house. The petals are very broad, with a faint purple tint, showing a tendency to run into streaks, while the lip is of a most intense crimson, extending for 1½ inch into the throat. The flower has a bold and striking appearance quite distinct from the others. *C. Warscewiczii delicata* is exactly what its name indicates, very delicate, the petals being broad and bluish, tinted with little more colour in the lip. *C. Penelope* is also a pleasing variety, pale purplish bluish, the lip fringed crimson purple, with an orange throat. Several others vary in colour and form, one being nearly pure white. A fine imported mass on a great block, and including two or three varieties, is extremely handsome suspended from the roof of one of the houses.

Of Lælias there are numerous fine specimens of *L. purpurata*, and about thirty sheaths, now showing, promise a fine display later in the season. *Lælia anceps* and its varieties have been beautiful for weeks past, and are arranged to form a good bank with *Cœlogyne cristata* at the end of the house. Very remarkable is an uncommonly good specimen of the unrivalled *L. anceps Dawsoni*, which has this year made four breaks, and is estimated to be worth at least 80 guineas. The character which strikes the observer in this variety is the purity of the white sepals and petals and their great substance, the petals being 1½ inch in diameter; the lip is white with a hard blunt purple apex, with crimson veins in the throat and a bright yellow ridge in the centre. *L. anceps Percivaliana* and *L. a. Hilli*, the former bluish tinted with a rich purple lip, and the latter white, each possessing attractions. *Lælia harpophylla*, a most useful plant, is grown well, and produces its orange scarlet flowers abundantly, contrasting well with the plants of *Cœlogyne cristata* which are placed in this group. For arranging with any light-coloured Orchids this *Lælia* is extremely valuable, and will take a prominent place amongst the best of garden Orchids. The flowers are of convenient size for buttonholes or bouquets, and they last a surprisingly long time when cut.

VANDA CÆRULEA.

The other notable plants in the several houses cannot be even enumerated. Of *Cypripediums* all the best species and varieties are grown, including several rare and valuable plants. *Dendrobiums* are also favourites. *Cœlogyne cristata* is in fine condition, several specimens exceeding 3 feet in diameter, and one in particular of *C. Lemoniana*, of similar size, is covered with its lovely flowers, pure white with a delicate yellow-tinted lip. In the porch of the Phalænopsis house is a good batch of the much-esteemed *Vanda cærulea*, which is one of the specialties at Oldfield, and is very successfully grown. The plants are in tall perforated pots, containing roughly broken charcoal and potsherds, but the good results obtained are considered due to the vigorous but well-ripened growth which every effort is made to secure. During the greater part of spring and summer the plants occupy a corner of a greenhouse facing due south. The roof of this house is covered by Vines, and it is freely ventilated, but the position allotted to the Vandas is on the front shelf, where they are exposed to the sun on all occasions, except when it is unusually hot, when a very slight shading is employed. In this way grand spikes of large well-coloured flowers are obtained, such as would satisfy the most exacting.

In the cool house large numbers of *Odontoglossums* in variety are grown, the examples of *O. Alexandrae* being very notable. *Masdevallias* include all the choicest species and varieties, and *Sophranitis grandiflora* is freely employed suspended from the roof with good effect. Many of the occupants of this house might be noted, but sufficient has been said to indicate the chief features of the Oldfield collection.—LEWIS CASTLE.

ADIANTUM CUNEATUM AS A WALL PLANT.

THE foliage of no plant is more eagerly sought after by bouquetists and florists generally than that of *Adiantum cuneatum*. Well-developed

fronds of this extremely popular plant always find a ready sale, though at much higher rates during the winter and early spring months. At the beginning of the winter months good matured fronds are generally plentiful, but with the close of winter the case is very different, and especially so where the demand for fronds is great. Plants which have been well matured during the previous autumn will retain their fronds in good condition for a considerable time in a much lower temperature than is generally supposed. On the other hand, plants that are grown rapidly in brisk heat in the early months of the year are useless to the bouquetist unless submitted to a lower temperature and gradually hardened. Mr. J. Ellam of Cliveden, on whom I called a short time since, grows the plant in a way which might well be imitated. In looking through the numerous ranges of glass at this establishment we came in turn to the fernery—a lean-to structure, if memory serves me right, the back and end walls of which were originally covered with *Ficus repens*, which, though good for the purpose, is of comparatively little value besides. In its stead, owing to the great demand for large Maidenhair fronds, Mr. Ellam has planted a portion with *Adiantum cuneatum*, the results being satisfactory in the extreme. Strong diagonal galvanised trellis wire in convenient lengths is secured to the wall, leaving a cavity of about 2 inches for suitable soil, which, in this case, should consist of rough fibrous peat; this, faced with moss, will be all that is requisite, planting according to circumstances. Thus placed, the individual fronds grow to a much greater length than by ordinary culture in pots, which is in itself a great gain. At the time of my visit a considerable number had been collected and a new crop appearing. Those, however, that remained bore sufficient evidence of perfect health in their large and deep green fronds.

There are some miles of walls in greenhouses in the United Kingdom which are either devoid of greenery or are at least covered with useless plants. Imagine a wall 100 feet long and 8 feet high planted with *Adiantum cuneatum*, and densely clothed with fronds! What would be more pleasing to the eye, or what give a quicker, greater, or more reliable annual return? With such a wall a system of gathering the fronds would be requisite; such, for example, as clearing off a yard at a time in preference to collecting indiscriminately over the whole, so that by the time the end was reached a fresh crop would be ready for use at the other end. I am convinced that no plant which we can place against a wall is capable of producing such profitable results as this. There are scores of walls to my knowledge in lean-to structures upon many of which plants will either not thrive or are drawn in a one-sided manner towards the light they lack; such places as these could not be better utilised than in the above-named manner, the present being an excellent time for making a beginning.—E. JENKINS.

THE PINE APPLE AND ITS CULTURE.

[An essay read at a Leeds Gardeners' Meeting by Mr. Joseph Smith, gardener to T. Green, Esq., Asket Hall, Roundhay, Leeds.]

(Continued from page 173.)

ABOUT the end of April or the beginning of May the suckers are transferred into 10 and 11-inch pots, well drained with plenty of broken pots. A few days before potting they are watered so that the soil is moist for the operation. After turning them carefully out of the pots the crocks are gently taken from the bottom of the ball, the plants placed in the centre of the pots, and the compost, "which is similar to that used for the first potting, is pressed in firmly with a good stick" until it is at least as firm as the ball itself, so that when water is given it will run into all the soil alike. They are then plunged in the pits again, allowing 2 feet from plant to plant in the rows. This being the only shift they get they are grown on through the summer as successional plants. If they should throw up suckers these are better taken off at once, as they are of no use and only tend to rob and impoverish the plants.

The following summer onwards these plants will produce fruits, and from the time of taking off the suckers in spring to the bearing time will be from sixteen months to two years, thus producing fruit from six to eight months in succession. Suckers taken in September from the earliest fruiters and potted will be ready for their largest pots in February, making larger plants and coming into fruit a little earlier than those taken in February, thus lengthening the fruiting season.

Having now placed the plants in their growing quarters, the three essentials are—first, a suitable temperature; second, careful watering; and, third, ventilating judiciously.

Temperature.—When the house is started in February I prefer a temperature of 70° to 75° in the day with sun heat, and 65° at night, and as the days lengthen and the sun rises a slight increase in both may be allowed until June and July, when it will be quite easy to retain 70° at night and 75° in the day, rising to 85° with sun heat. Then with the lowering sun and declining days it will be necessary to gently lower both until the end of October, when from this date to the starting time in February the temperature should be brought to its minimum to allow the plants a season of rest, or 60° at night and 65° in the day, allowing it to rise to 70° with sun heat; the bottom heat having been also brought down to 65° to 70° for the successional plants, and 75° to 80° for those swelling and ripening their fruits.

Water.—This should be applied with discretion and judgment, as the Pine Apple will suffer more from excess than deficiency. Experience alone can determine when and when not to give it, as no regular system of periodical watering can be adopted in our changeable climate. In the first garden I served as a lad where Pine Apples were grown the gardener used every Thursday morning to examine them, and it was my duty to go with him and pour the water into the funnel-shaped tube that con-

ducted it down to each plant, but they were not watered indiscriminately; each plant was examined, and those only which required were supplied.

In starting the plants the evaporating troughs are filled with water, and it is liberally thrown about on the paths morning and afternoon, and if this humidity is maintained the Pine will not require so much water at the roots. When in bloom the air is kept a little drier. When suckers, and newly potted, they must be very carefully watered, but when they become established and the pots are filled with roots, larger supplies will be required. Those that are about to fruit receive a little guano water occasionally to help them forward and to swell their fruit until they commence colouring, when water is withheld altogether. If any of the successional plants are weakly they are benefited by a little of the same stimulant, but if they are growing strongly they do not require it.

A good syringing amongst the plants and the bark in hot weather is very beneficial when the house is closed in the afternoon, but in the hottest weather I never syringe the plants beyond a very slight spray from the syringe after a very hot day. They are never shaded from the brightest sun, as I am sure, if the glass be free from specks, there is no danger of scorching provided air be liberally admitted.

Ventilation.—This must be given on all favourable occasions, a little at each top ventilator rather than allowing a rush of cold air to flow in at once by opening too wide. When the temperature by sun heat rises above the point recommended, ventilate sufficiently to prevent it rising too high, and as the days lengthen and the outside air becomes warmer increase the ventilation as much as possible. In June, July, and August, when the air is warmest, have the side lights open.

Propagation is effected by crowns, gills, and suckers, but those from suckers are always preferred; crowns and gills being used only to increase the stock of such as are shy in throwing up suckers.

Varieties.—There are several varieties which are worth growing; but as my space is limited I confine myself to the Queen's, the Broad-leaved variety or common one, and the Ripley Queen, which are dwarf, and, for our purpose, the best grown. I have also one or two Smooth-leaved Cayennes, which is a very fine variety, but shy in producing suckers; and I grow two or three Providence for the sake of its large fruit, which, however, is only of moderate flavour.

Insects.—White scale and mealy bug are the two insects which attack the Pine Apple most. Both are difficult to exterminate if the plant is once infested with them; therefore it is all the more important that a sharp look-out be constantly kept to detect their first appearance. The plan I adopt is this: when the suckers are taken off they are thoroughly well syringed with either Fir tree oil or diluted petroleum, every part being well wetted and allowed to remain on for half an hour. They are then placed on the floor, and clean water with the force of the garden engine is applied to them on all sides and in the centre; then they are placed with their heads in a downward position until potted, so that the water gets completely drained out of the heart and axils of the leaves. By this means I have no farther trouble. Still, it is wise to keep a look-out so as to give them no chance of increasing.

In conclusion, I hesitate not to say that if these remarks are carried out any man in the profession may produce fairly good and presentable fruits.

CYPRIPEDIUM! INSIGNE.

IN your last issue I notice that my old acquaintance, Mr. James Muir has a very good article on this well-known and useful *Cypripedium*. I cannot, however, agree with him when he says he prefers the old variety to *C. Chantini* (punctatum violaceum). In this case I prefer quality to quantity, and would rather have one of the finer varieties to a dozen poorer ones, especially when they are equally as easy to grow and occupy the same space as the poor ones do. It may be, however, as well that tastes differ, but if Mr. Muir was here when the better varieties were in bloom I think I could make him change his opinion.

I am quite with Mr. Muir in regard to the usefulness of the old variety, and do not want to disparage it in any way; but in my opinion it is inferior to *C. Chantini*. The best plants I ever saw were grown in a Pine stove close to the light, and had not been shifted for years; in fact they had grown half way down the outside of the pot, and were encouraged by liberal applications of weak liquid manure.—H. THOMSON, *Clovenfords*.

SPRING TREATMENT OF SUMMER-FLOWERING CHRYSANTHEMUMS.

CHRYSANTHEMUMS of the Madame Desgrange type are, in my opinion, the coming plants for bedding in summer and autumn. When better known they will certainly reduce the number of Pelargoniums, which have been so common of late, as they have many advantages over all such flowers. The Chrysanthemums are easily propagated, very hardy, grow quickly, flower most profusely, and there is no danger of their being injured by the weather. Excessive heat does not wither them or stop their growth, and rain does not spoil the blooms. Two or three years ago we had only one summer-flowering variety here—a yellow one, *Précocité*, but last year we bought several, and although they were young plants mostly propagated in spring they made an excellent display by August and until December.

Now is the time to take plants in hand for the coming summer. Where the old roots remain in the ground from last season it will be seen that these are throwing up many suckerlike growths, and make fine young

stock. They should be carefully lifted with a small root attached to each, and then place them in boxes like ordinary bedding plants. They may be placed under glass in a cool house or frame until growth has commenced, when they may be taken out and allowed to remain in the boxes until about the middle of April, when they should be planted in their flowering quarters. Another way of treating them where there is no glass is to allow the old plants to remain untouched until April, when the side growths should be taken with a root to each, and plant them at once in their summer position. The old plant need not be disturbed.

In buying new plants or new varieties they ought to be obtained at once, as they will only be small pieces with one shoot. Propagation should be commenced by taking the point off and inserting it as a cutting. With a little bottom heat this will soon root and supply another cutting from the top. In following this up and taking the side shoots from the bought plants as well a useful batch may be secured by the middle of May, when they should be planted out, and the result will be highly gratifying before the season is over.—J. MUIR.

THE MANAGEMENT OF HORTICULTURAL SOCIETIES.

[An essay read by Mr. R. G. Waterman, Roseleigh, Woolton, February 14th, 1885, before the members of the Liverpool Horticultural Association.]

WHY should we discuss horticultural societies, and how shall we manage them to succeed? The reply may be given, We have officers and a good working Committee who have in six years arranged and carried out thirteen exhibitions, which have fully held their own in the country, and have proved worthy of the city of Liverpool, and have resulted in a splendid balance of £578 13s. 7d. What need, then, to tread on delicate ground? Let us plod on in our old track. But times are now such when we must be up and doing, competition is so strong in these days that to be successful energy, tact, knowledge, and hard work are necessary. We will first briefly glance at the foremost of our provincial societies. Manchester, York, Shrewsbury, Edinburgh, and Liverpool (statistics of Southampton are not available), these, we believe, stand in the highest position; the Royal Horticultural and Botanical Societies of London, also the Crystal Palace are hardly within bounds of comparison, neither is Manchester financially, so far as our knowledge extends, only as being successful exhibitions; Edinburgh, as to age, heads the list, being instituted in the year 1809, and incorporated by Royal Charter 1824, or now seventy-five years old; Manchester follows with fifty-two years; York, twenty-six; Shrewsbury, or more properly speaking, Shropshire, ten; and Liverpool, the junior, not yet seven. As to the income York holds the first position, having but one show, yet the receipts amount to the total of nearly £1800, and this with only £12 5s. in subscriptions. In 1884 the gate money realised the enormous sums of first day £264 9s. 5d., second £811 13s. 3d., third £323 18s. 9d., or a grand total of £1400 1s. 5d. In addition to the horticultural display, York includes a grand musical gala and other attractions. Mr. John Wilson, Secretary, states that after having a very respectable balance invested, they have divided between £700 and £800 amongst the charities of the city; and out of twenty-six annual exhibitions they have only in four or five instances failed to make a profit, and speaking from memory the losses would not exceed more than £350.

Shrewsbury, with a spring and summer Shows, is also well to the fore. Gate money and tickets for two-days summer Exhibition amounted to £1134 8s. 5d., subscriptions over £400, or total receipts £1740 17s. 8d.; but a letter from Mr. W. H. Adnitt, one of the Honorary Secretaries, shows distinctly the lines they work upon, and how successful have been their efforts. "I have been connected with flower shows for twenty-five years, and for many years a show was held here, simply flowers and a local band. I need scarcely say the result was a lingering death, the receipts scarcely even being equal to the expenditure. For some three or four years the thing lay dormant, but in 1875 I tried with some others to revive the Show and make it a holiday. The Coldstream Band was engaged, a schedule of what we then thought of liberal extent was drawn up, but many thought failure would be the result; but to the utter astonishment of everyone we cleared £400. We now make our fête a fourfold one—flowers, bands, performances, and fireworks. During the eleven years we have had shows we have taken in a small town of 25,000 inhabitants like Shrewsbury no less a sum than £18,000. We have now a reserve fund of £2000, and have given to local charities and other objects not less than £1200."

Edinburgh, with a spring, summer, and autumn, and this year probably a Chrysanthemum or winter Show will be added, stands in a healthy state, with an income for the year 1883 of £1568 14s. 3d., including subscriptions £456 11s. 6d. Gate money—spring, two days, £415 11s. 9d.; summer, one day, £205 15s. 6d.; autumn, two days, £408 4s. 11d., or total gate money for the year £1029 12s. 2d. Manchester being somewhat differently constituted figures are not forthcoming. Liverpool gate money is very low, the three Shows not giving so large a return as one day at York, or only £729 0s. 5d. As to subscriptions Liverpool leads the way with a magnificent list of 489 honorary subscribers, and 685 members, or a total of 1174, with the grand amount of £558 16s.

Now we will just glance at the different schedules. Edinburgh can boast of the largest number of classes, having as many as 162 for the autumn Exhibition, or for the three 422 classes. Shrewsbury follows with 146 for the summer, Liverpool for the same season ninety-eight, York ninety-seven, Manchester seventy-nine. The amounts as offered Manchester takes premier position with prize money (1884), value over £938. Edinburgh (1884) spring £350, summer £256, autumn £270, total £876. Liverpool offers for the present year £683 5s. 6d., divided for spring, summer, and autumn as follows—£116 11s., £382 17s. 6d., £183 17s. York, one Show, £526. Shrewsbury summer Exhibition £326, the spring Show being but a small amount.

Time will not admit of our analysing the different schedules; suffice it to state that most throw out tempting baits to secure the most noted and successful exhibitors of the country. Manchester frames a very liberal schedule throughout as to value. In thirty-one classes £1 or more is offered for each plant, or single fruit or dish, as the case may be, either separately or in the usual collections. For groups arranged for effect, which

we are glad to note all the Societies have now in their schedules, Manchester offers as a first prize £15, York £10, Edinburgh £7, Liverpool £6, and Shrewsbury £5. Manchester is exceptional, inasmuch at its Whit-week Show no prizes are offered for vegetables or cut flowers. The Shrewsbury premier prize is £25 for twenty stove and greenhouse plants; York £20 for sixteen; and Liverpool £15 for twelve plants. For fruit York offers £8 for eight distinct varieties; Manchester the same value for a like number of kinds; Liverpool £6 for eight kinds; Edinburgh £6 for twelve bunches of Grapes; and £5 for twelve sorts of fruits; Shrewsbury £5 for six bunches of Grapes.

One very important consideration must not be overlooked—that is, as to restriction. At Manchester, York, and Edinburgh every class is open to the world, and entries are free. At Liverpool members exhibit free; to non-members the entrance fee is 5s. for each show; and all classes in 1884 were open, the same as the three already named; but to the discredit of the Liverpool gardeners, or the Committee of the Association, it must be admitted in the year of grace, 1885, four classes are within the ten-miles radius; class 88 at the summer Exhibition, and classes 56, 62, and 65 at the autumn Show. The horticulturists of the district should remember with pride where the premier awards of last year's Chrysanthemum Exhibitions of Birmingham, Huddersfield, and Hull went to. We are told our schedule for Chrysanthemums is not large enough must suffice; it is the greater glory to our growers going far afield and reaping such splendid honours. Then why not in return give the best grower a chance in one and all of our classes? A few months ago, if the following query had been put to our best growers or judges of Chrysanthemums, When do you think Liverpool will be able to grow Japanese cut blooms to compete with the south? The reply would probably have been a steady shake of the head, and the single word quietly spoken "never." He might also have volunteered the information "our climate will not permit as to compete with the southerners." Our last Show has disproved that, and we ought not without a severe struggle admit being incompetent to grow vegetables, Apples, and Pears to compare with other parts of the country. Shrewsbury this year throws open their whole schedule with the following entrance fees—cottagers 1s., for cut flowers 2s. 6d., and to the whole schedule half a guinea.

It is hardly within our province to go into the matter of special societies, but a word of praise is due to the National Rose Society for its usefulness and undoubted improvement of the queen of flowers. We have now another National, one perhaps which will prove of far greater interest to us. We refer to the National Chrysanthemum Society. Their mode of procedure was hardly to be commended when they first assumed the title, but now it appears they are endeavouring to take a broader ground as their basis, inviting the co-operation of all lovers of our autumn queen, offering medals to societies who are affiliated to them at cost price, and allowing such societies to send a representative of their body to serve on the general Committee. No town will be watching this week with greater interest and goodwill than Liverpool, but we must now consider our own Association.

In the year 1879 a presentation was made to the late Mr. Hinds at the Aigburth Hotel on his leaving Liverpool. A conversation amongst some that were present turned upon horticultural exhibitions, and whether those of Liverpool were worthy of the town. A meeting was the result, which was held at the Bull Hotel, Dale Street, when there were present Messrs. W. Mease, W. Tunnington, W. Blomily, J. Bramham, E. Bridge, F. Mee, and our late esteemed friend, F. Faulkner, and W. Bardney as Secretary *pro. tem.* These meetings resulted in the formation of the Liverpool Horticultural Association; and we must here note that the Committee was unique, inasmuch that it was composed of gardeners only. There is, however, one Society, at the first Show of which in November last we had the pleasure of being present—namely, the Isle of Man Chrysanthemum Society, that is even more entitled to the term unique, as it is managed by a Committee of ladies. The Liverpool executive framed a liberal schedule; considering the uncertainty of subscribers, visitors, or the weather, the prize list amounted in the aggregate to £267 18s. 6d., divided into sixty-three classes. The Committee laboured hard for the subscription list, which showed 243 honorary subscribers and 230 members, or a total amount of £283 16s. 6d. The year's working was most gratifying, showing a balance of £189 0s. 3d. on the right side. This gave so much satisfaction that in the following year, in addition to the Sefton Park Show, an autumn Exhibition was arranged with similar results, a balance of £340 6s. 10d. remaining in hand January, 1883. The Committee decided in extending its usefulness if possible, and a spring Show schedule was framed, and the Exhibition held with disheartening results; but after carefully weighing both sides of the question a spring Show was again announced with far more satisfactory results.

A glance at our report for the present year is needed, and it will be seen our subscribers for the past year, as already noticed, exceed any horticultural society in the United Kingdom; but the gate money is not yet worthy of Liverpool. It is doubtful, however, whether Liverpool will be able to induce the masses to visit the exhibitions, unless a more suitable site be provided. Take Manchester and Sheffield even at a Rose show when the thousands are promenading upon the beautiful well-kept lawns.

We have now entered upon our seventh year, and it is worthy of our serious consideration whether we cannot improve our position as a society; therefore it would be well to look at our arrangements from various points. Are the shows arranged in the most desirable manner for the comfort of our visitors? St. George's Hall is not nearly large enough for the numerous entries and the 7,000 visitors who patronise them. Waverley Market, where the Edinburgh hold their exhibitions, is the size and convenience to be desired. Another consideration is the opportunity of appreciating the music. The Committee now secure, and that we believe wisely, the best music to be obtained in the city, but the only notice our subscribers get is on the placards, and a couple of thousands of the cheapest and meanest programmes obtainable are scattered broadcast amongst the audience. Why not make our programmes more tasteful? let these be arranged in good time, secure some first-class advertisements for front and back, and let about five thousand be printed and one or two enclosed with tickets as sent to subscribers and members.

Making the shows is very important, and a few items have to be carefully considered. Judges must be competent, honourable, above a suspicion of a doubt, and if possible, strangers to the district. Staging is a duty that

not only requires judgment, knowledge, and energy; a good stager should be courteous, yet firm, with exhibitors. The rule as to the time of exhibitors leaving the show should be strictly enforced, to give the judges proper time and facilities for making their awards. Competitors should be willing to do their utmost in regard to this matter. They should also consider the schedule as compiled for all sections of growers, large and small classes being provided; therefore as ye are strong be merciful, consider the association is not formed for gain, but for honour and friendly rivalry. There is no honour for a large grower to win in a small class, but for a small grower to surpass a large one in a small class is meritorious; but if he succeeds in a large one he deserves every congratulation and commendation. Although this is referred to, it is with pleasure to state that but few cases can be recorded where the weak has been harshly dealt with by the strong.

Our schedule requires but little notice—the baits already referred to are not required to secure superior exhibits. Take Liverpool as a horticultural centre it must hold a very enviable position, for whatever department may be selected we shall find worthy foemen in our midst.

Our winter meetings must not be left without passing the ordeal of criticism. There is not yet the heartiness and success attending them that there ought to be amongst such a mass of the craft as we can present in Liverpool. We would especially urge upon all the desirability of making these reunions useful, instructive, and entertaining. Let us hope the members will accept the cordial invitation of the Committee, and bring for inspection anything worthy. Let us have every meeting not a little flower show as generally understood, but a collection of horticultural rarities and beautiful specimens. Another matter we are compelled to mention is the invitation to our younger members to enter the lists as essayists on horticultural topics. Last year we had two entries, the year before only one. Why is this? We cordially invite the young men to give us their ideas fully and freely. We sincerely urge upon them the usefulness of essay writing, as it is of vital importance to be successful as gardeners, to prove themselves not only practical but also competent to put their ideas on paper in a clear and terse form. It also gives confidence in facing an audience, which they will find is of the utmost importance. We feel assured that although competition is now keen the keenness will not abate, the fight will be equally severe, and, comparatively speaking, the untutored and careless will have to give way to the earnest, striving, and diligent.

ABOUT BEDDING PLANTS.

WE have again reached the season when the preparation of plants for summer and autumn bedding must have earnest attention to do justice to the arrangements for the current year. Pelargoniums are still at the head of the list of plants suited for this purpose, and these are best divided into two sections—the flowering varieties, and those grown for the beauty of their foliage. Where the plants have been wintered in boxes—the best plan generally—they should be potted without delay. I think as a rule that gardeners by a short-sighted policy in this the matter of potting, give themselves in the end much more labour than is necessary, while they at the same time fail in securing such good plants. We find it difficult to provide room for everything that must have a place under glass in the spring months; but considering it to be the cheapest, because the most satisfactory way to deal liberally with the plants, we have grown fewer of them, and given those we did grow much better treatment than is usually accorded to Pelargoniums. For the stronger-growing sorts 5-inch pots are used, Henri Jacoby being the type of these, less vigorous kinds of the Little David class having a smaller size. We cannot afford the best quality of soil for these, but by adding a good proportion of the right kind of manure, in addition to a little superphosphate and potting firmly, the plants make very strong and vigorous growths. After they are established in the soil the tops are pinched out, and the plants being placed thinly on the stages the shoots break well. Another point in general practice, which I do not like to follow, is allowing the plants to stand about in vineries until they are drawn and ineffective until after they have been in their summer quarters for some time. I do not object to the plants having a start in a moderate heat of 55°, but immediately the plants have young growths starting after pinching, an ordinary cool house, is the place for them. I had a very cheap structure erected for these and other plants which either become tall and weak or are starved under mats. Plunged in coal ashes they require very little attention, while they make progress slowly, but steadily, and without check.

Variiegated Pelargoniums, especially such as Golden Chain and the tricolor sorts, are best propagated in spring, though it is not possible to grow the whole of them in that way. One feature of the variegated sorts is that they must not be starved at the roots; they are also the better for a higher temperature than the green-leaved varieties. Strong plants of these are most useful for placing amongst Violas, Koniga, Lobelia, or Ageratums, forming most pleasing combinations. Cuttings at this time can either be dibbled singly into thumb-pots or in numbers over the propagating bed, or in boxes. Early in the season they are apt to jump off, but if the ends are merely set on the surface and kept moderately moist they root with certainty. However, I find it better to wait until there is no danger to be apprehended, as the cuttings are stronger, and in the end make better plants. In order to have fine plants they must be grown close to the glass in heat, the more weakly sorts having 4-inch pots, stronger varieties a size larger. The tops require to be nipped out of each, when the plants will throw from four to six shoots, and form sturdy little specimens. The foliage of these is larger, brighter, and in all respects better than from autumn-struck plants.

For several years past I have grown strong stock plants of those bedding plants propagated in spring. The advantages of this practice are that a few strong plants furnish as many cuttings as can be procured from a large number of autumn-struck cuttings, that we have no losses to mourn over during the winter months, no difficulty in procuring sufficient

cuttings in spring, and little space is taken up by our few stock plants in comparison with the old plan. At the present time we have a number of cuttings ready of Lobelias, Ageratums, &c.; and our plan is, if we can secure a sufficient stock from the first cutting over, in addition to later batches from the cuttings now taken off, then the stock plants are at once thrown away. If our supply is to be short another crop is taken from the old plants, when we are sure not to fail in having enough plants. The rooting of these plants is now so generally understood that it would seem superfluous to write about it. However, I may just note that cuttings always strike best if they have not been grown in too high a temperature. It is also wise to increase the heat for striking cuttings. The later in the season the more heat may safely be given. The best place at this time is to strike cuttings in a propagating pit. This is a most useful adjunct to a range of class, very ordinarily left out; but no structure will be found to pay better. We have one that is suited for flower-forcing during winter, and for growing Melons and Cucumbers in summer. We can cover the hotbed pipes with 5s. worth of wire netting, fill the meshes with moss, on that place a layer of sand, and have a perfect propagating bed. Later on beds of soil are placed for Melons, &c., and during winter after the house has been cleared wooden boards make a good trellis for plant-forcing. Mr. Muirhead of Paxton, Berwickshire, a most enthusiastic grower of flowers, gave me the hint as to the wire netting and moss. He has a small box fitted over the main pipes from the boiler to the greenhouses in the manner indicated, and secured an efficient propagating box that many gardeners would be glad to have. I have struck cuttings very readily in ordinary boxes, the cuttings into a thin layer of sand, panes of glass placed across the tops of the boxes, and these on hot pipes. In April nothing is better than an ordinary mild hotbed of manure and leaves, covered with common wooden frames and sashes. Over the manure a thin layer of leaf soil should be laid, and the cuttings dibbled thinly therein. After being rooted the plants can be gradually hardened and left until wanted for planting out. I have rooted cuttings up to May in this way, and they make capital plants.

Large numbers of plants are raised from seeds. Of these Veitch's *Lobelia speciosa* should be sown at once. This strain is so true and fine that it is quite as reliable as are those struck from cuttings. East Lothian Stocks should also be sown now. The point to be guarded against with these fine plants is damping when small. This can always be obviated by abstaining from watering the young seedlings over the foliage, and by transferring them to cold frames when the seed leaves are well developed. *Chamæpeuces*, Tobacco, *Acacia lophantha*, and slow-growing plants generally should also be sown soon, but many seeds are sown far too early. Any plant that has time to become strong and well established by late sowing, as in April, should most decidedly be left till then. The results are far better plants with less trouble in transplanting, &c. A healthy unchecked plant, though smaller, will leave larger, though stunted ones, far behind in the end.—B.

NORTH AMERICAN ORCHIDS.

PERHAPS in these days, when the Orchid mania is raging, and the uttermost parts of the earth are "investigated" to discover new species of this wonderful flower wherewith to adorn the Orchid houses of wealthy amateurs, a few remarks about our native varieties may interest those who, not having an abundance of this world's goods, are fain to content themselves with such specimens of the genus as inhabit the fields or groves of our native land.

The various kinds of *Cypripedium* are among the most showy of Orchidaceous plants in this section, and the beauty of their blossoms rivals that of some of their more favoured sisters occupying conspicuous places in the greenhouse. The *Cypripedium acaule*, with its large purple flower nodding on the slender graceful scape, is a veritable floral gem, and the more common *Cypripedium pubescens*, or Indian Moccasin Flower, with its golden blossom, so like a gigantic *Calceolaria*, is a plant which no one who loves the wild beauties of the forest would pass unheeded. The loveliness of both the preceding species pales, however, beside that of the *Cypripedium spectabile*, or Tall Lady's Slipper, a denizen of swamps in this part of the world.

There is something marvellous in the appearance of these great white flowers, which have markings on the inner surface, delicate as if the tiny flecks of colour were laid on with a brush held by a fairy's hand. The large sepals of these blossoms are white, or nearly so, which adds greatly to their beauty. Indeed, when looking at a cluster from a little distance we should not find it very difficult to imagine that the angel of the flowers had appeared to mortal vision.

The *Orchis spectabilis*, or Showy Orchid, is occasionally found in our woods, and is described by Gray as "producing two oblong ovate shining leaves, 3 to 5 inches long, and a few-flowered five-angled scape, 4 to 7 inches high." This little Orchid is one of my favourite wild flowers, and the bare thought even of its strange and sweet perfume takes me back to the days of my early childhood, when it was pointed out to me and the name impressed on my memory by my father, who was an enthusiastic botanist, and whose companion I was in many a long and weary tramp in pursuit of floral treasures, when the distance was so great that the small member of that botanical fraternity had to be ignominiously picked up and carried in order to facilitate the journey. *Orchis spectabilis* can be flowered in the house, if removed from its native habitat in early spring and potted in a proper manner. I do not know that I used anything but clear leaf mould for the specimen I procured. I remember finding a small species of the *Orchis*, the name of which I do not now recollect, which, I think, is rare in this locality, as my father had never seen it before, which had a little spike of flowers of such a shadowy appearance that I was reminded of the skeleton flowers or leaves which were made up into the "phantom bouquets," so popular years ago. I thought that the "Phantom Orchis" would be an exceedingly appropriate name for the plant, but perhaps the

one who named it was of a more practical turn of mind, for I am quite sure it bore no such startling appellation.

The *Goodyera pubescens* is another interesting, though not very showy, member of the *Orchidaceæ*. Its chief beauty lies in the leaves, which are small and close to the ground, being radical and having short petioles. Any lack in size, however, is atoned for by their exquisite colour and markings. They look as if made of dark green lustrous silk, covered with a network of white lace. This little woodland beauty can be easily transferred to the house by giving it leaf mould to grow in, and a very little care and attention. Although there is said to be "not less than 1500 species" of the *Orchis* tribe—it is "sparingly represented in the United States"—still, there are enough to afford many a pleasant and profitable hour to those who care to look for them in order to discover their beauties and peculiarities, and to whom an *Orchid* is not simply a showy flower brought from a far country at a great price, but as one of the wonderful works of that Beneficent Being whose every creation we may admire, even though we do not comprehend. For when we have analysed and examined, and pondered and speculated, how much nearer are we to the mystery of existence that lies wrapped up in every tiny bud and waves in every blade of grass that is tossed by the passing breeze?—H. R. L., *Hoosac* (in *Vick's Magazine*).

REPOTTING ZONAL PELARGONIUMS.—Your contributor who furnishes "Work for the Week" omitted to refer to the necessity of repotting Zonal Pelargoniums that have been wintered as small conservatory, sitting-room, or window plants, and that have had little water during the past four or five months. At present, with the best care, they are either waterlogged, with the soil wet and cold, or where it is dry and porous water will not remain in it. There must be thousands of your readers with their favourites in this state, and the only remedy seems to be to give them a fresh start with new soil and fair play, recommencing with the season of growth, which for them may be said to begin in March. This will apply to plants that have been flowering the whole winter, and that must now have the soil exhausted, and equally to those as above that have not, but are expected to do so during May and June. The latter require somewhat different treatment. The roots must not be much disturbed, but turned out on the hand, the drainage scanned, and to assist the future flowering give them a pot slightly larger. The ball of earth need not be disturbed, and consequently not the slightest check will be sustained. The temperature here is over 50° in the open air now; so under similar circumstances all the plants will require is to be put into a cold pit, frame, or greenhouse until vigorous growth recommences. Most people have a certain object in view, some growing for winter decoration, according to Mr. Cannell's system, in warm, light span-roofed houses, where no other plants equal Zonals in warmth and brilliancy of colour-tinting. Those I write for generally have no such facilities, and are satisfied in their suburban villas and town residences to have good blooms in summer and autumn.—W. J. M., *Clonmel*.



KITCHEN GARDEN.

MARCH is a busy month in the kitchen garden. Seeds of almost every crop grown may be sown this month, and many plants require attention. Dry weather and free working soil are two of the most favourable conditions which any vegetable-grower can desire at this season, and it would be found more advantageous to leave seeds unsown until April rather than put them in when the soil is too wet and ungenial. The greater part of the secret of successful vegetable-growing rests in getting the seeds well in, and too much attention cannot be paid to this.

SPRING-SOWN ONIONS.—March is the month for sowing these, and the full crop should be sown on the first favourable opportunity. Dig the ground deeply, manure it thoroughly, and sow on a dry day. Do not make beds, it is a waste of ground, and no gain to the produce. Open drills 15 inches apart and 1½ inch deep. Sow very thinly, and then cover with a mixture of fine soil, sand, soot, and anything which will favour free germination and ward off grubs. If enough of this material can be had for covering, do not put any of the soil which came out of the drills over the seeds, but level it between the rows with a rake, and roll the whole of the piece to settle the soil and make it firm for the young plants coming through. Onions cannot be grown in too firm soil, as they bulb well in it, and are not liable to be injured by insects. Soil with much clay in it will do for Onions, but none of this should rest over the seed. At present we are sowing Wehb's Improved Banbury, James' Keeping, Bedfordshire Champion, and Giant Zittau in large quantities.

PARSNIPS.—The Student is a fine quality variety, and so is Carter's Maltese, and both should be sown for a main crop as soon as possible. Shallow soil is of no use for Parsnips. The best Parsnip-grower in our district is a railway signalman, who grows his roots on the Great Western embankment; and as he makes a speciality of them, he trenches the soil 3 feet deep, and secures splendid roots. All growers may not be able to trench so deeply, but the soil must be worked 18 inches deep at least if good roots are desired. Ground trenched last year may do this time by digging or forking over the surface. Moderately rich soil is the best. A free mixture of ashes amongst it does no harm, but rough fresh manure should not be put in at present, as it will not be decayed by the time the roots descend, and it would cause many of them to become forked. Open the drills 18 inches or 20 inches apart, 2 inches deep, and sow very thinly. We have sometimes put a few seeds down 1 foot apart in the drills where

we wished the plants to be, and did not sow along the whole of the drills. This saves seed, and answers very well, especially when a few handfuls of the manure used for covering the Onions is placed over the seed, then rake and roll it down.

CELERY.—The whole of the seed to produce plants for the earliest crops should be sown, but there are few things in which growers make a greater mistake with than this, as 1 oz. of seed is generally ordered in the first place, and then as many plants are raised as would plant out an acre or more of land. We find a quarter of an ounce ample seed to produce a very large supply, and a sowing made in an 8-inch pot or a cutting box will supply hundreds of plants. This is enough to sow at present. Good soil must be used for the young seedlings, and germination and rearing should take place in a temperature of 60°. We have sown our early Celery on a hotbed, but prefer the pot plan.

GARLIC AND SHALLOTS.—These can be planted out. Select sound medium-sized bulbs of last year's growth, and plant them out in rows 1 foot apart, with 6 inches from bulb to bulb in rich but light soil, and in a sunny position. The bulbs should almost be buried in the soil, and if a little sea or river sand is placed round each it will assist them.

POTATO ONIONS.—These can be treated in the same way, but a little more space must be allowed between the sets.

POTATOES.—Early kidney varieties may be planted out on warm borders and along the bottom of walls, but planting main early crops should be delayed for a time. Ventilate those gaining maturity in frames freely, and do not allow them to be injured by frost. Admit abundance of air to all seed tubers which are sprouting.

BRUSSELS SPROUTS.—The main crop of these should be sown in a warm position in the open. The seed and young plants are very hardy, and nothing will check them now. We generally sow the seeds in drills across a narrow border, and cover them with a little of our Onion mixture.

LEEKS.—These may be raised in heat with the Celery where they are wanted for exhibition, but for general purposes and use next winter sow in the open at the same time and in the same way as the Brussels Sprouts.

RADISHES.—A small handful of seed of Wood's Early Frame variety should be sown broadcast on the warmest position in the garden. Cover with half an inch of fine soil, and the produce will be found very useful in April and May.

RHUBARB.—Where new plantations of this are to be made begin at once and finish as soon as possible. Dig deeply, manure heavily, lift up the old roots, select the best pieces and plant these. They must be put in from 3 feet to 4 feet apart each way, and so deep that only the crown can be slightly seen on the surface. Young seedlings may be treated in the same way, and these are better than the old cut pieces.

SEAKALE.—New plantations may also be made, old crowns with many side shoots attached should be lifted, each crown being cut with part of the stem attached, and plant these to form fresh stock. These pieces will make good plants by autumn, but they are hardly so good as seedlings, which should be transplanted where too thick. A deep, rich, cool soil always produces good Seakale. Roots which were taken up some time ago for forcing can be planted again as soon as the crowns have been hardened in cold frames.

KIDNEY BEANS.—Give those bearing a heavy crop abundance of liquid manure, keep those in bloom in a dry atmosphere until the fruit is formed. Put in a large quantity of seed, as sowings now will produce pods in April and May, when large batches can generally be easily grown.

TOMATOES.—Do not allow those fruiting to form many side shoots. Pot successional plants. Sow seed for the open air supply of plants, and if the early plants are good kinds insert the shoots taken off as cuttings. We prefer them to seedlings.

FRUIT FORCING.

PINES.—Since the introduction of large quantities of Pine Apples into the English market many growers have discontinued their culture; but as the supplies of foreign fruits have been chiefly confined to the winter season the cultivation of Pine Apples for the London or summer season has become a matter of some moment, hence growers are able to dispose of the fruit during the summer months at fairly remunerative prices. Amongst summer-fruiting varieties the Queen is still unrivalled on account of its excellent quality, and because good fruits can be had in a period of eighteen months from the starting point. The plants which are to give the subsequent summer supply of fruits are best arranged in two sections, the first operation being a selection of the most vigorous of the autumn-potted suckers which have been kept gently growing throughout the winter months. These plants are placed into 10 or 11-inch pots, and plunged into a bottom heat of 90°. The second plants are those which are started now, as soon as they have formed good roots and before they become matted around the sides are transferred into pots of the size named above, and afterwards treated like the first. The modern system has greatly reduced the time hitherto occupied in Pine-growing; nevertheless, unremitting attention under the present system is required to secure the best fruits. Keep the night temperature at 60° to 65°, and 70° in the daytime from fire heat, with 10° to 15° rise under the influence of sun heat. Where rootless suckers are placed keep the atmospheric moist and close, and do not supply water until the roots show at the sides of the pots.

Continue the treatment before advised in other compartments, and if favoured with sunny weather make the most of it by closing early, and be more liberal in lightly sprinkling the plants, avoiding, however, such as may be in flower at the time.

STRAWBERRIES IN POTS.—Where plants have set a good crop of fruits

which have been thinned advantage should be taken of the first opportunity to remove them to a house with a temperature of 60° to 65° at night and 70° to 75° by day artificially, as the fruits swell best in a high moist atmosphere until they are changing colour, when a drier atmosphere is necessary to prevent spot and insure high flavour. Grown under those conditions the skin is much clearer and the colour brighter than when ripened slowly. Feed liberally during the swelling period with tepid liquid manure, and, whilst being careful not to give too much water, any deficiency will cause a check in the swelling and give a deadness to the fruit instead of the bright gloss so much prized. Keep successional batches well supplied with water, and fumigate if there be any aphides on the trusses before the flowers expand. Admit air freely when the plants are in bloom, and brush them with a feather or small plume of Pampas Grass in the brightest part of the day, air having been admitted some time previously. Thin the fruits as soon as the most promising sets can be distinguished, and avoid overcropping. Guard against cold drying currents of air coming directly into contact with the fruits, as this will sometimes cause them to become dry and hard, not swelling afterwards; besides, the fruit so affected has a brown rusty appearance, and is worthless. Continue to introduce fresh batches of plants as opportunity offers, choosing such kinds as Mr. Radclyffe, James Veitch, President, Dr. Hogg, and British Queen, with Cockscomb, which will succeed each other, and are all noble fruits, the last four being *par excellence* in flavour. The present is also a good time to place Strawberries in pots in late Peach houses and orchard houses.

MELONS.—Plants growing in the Melon house should be stopped so soon as they have reached the third or fourth wire of the trellis, the wires generally being 8 inches apart. The shoots resulting from the stopping may be trained horizontally to the wires, and if they do not show fruit at the second or third joint stop them at those points of growth, and rub off every alternate lateral on opposite sides of the Vine to prevent overcrowding. Plants that were stopped some time back, and are growing in heated pits, will now have several growths, of which three or four may be selected, two in the front and two at the back, all superfluous ones being removed, training those retained regularly over the surface of the bed, and stopping them when they have reached to within a foot of their allotted space, which will result in sub-laterals or fruit-bearing shoots. If these are formed very thickly on the first laterals or main shoots rub the others off on opposite sides. Fertilise the blossoms on fine days when the pollen is dry, and secure as far as possible a rather dry atmosphere while the plants are in flower, and until they have set their fruits. Stop the shoots one joint beyond the fruits, and when these are swelling reduce to one to each main shoot, or three or four on a plant, and as evenly disposed upon it as practicable. Commence ventilating at 75°, increasing it as the temperature progresses, keeping this through the day at 80° to 85° from sun heat, closing at 85°, running up to 90°, with plenty of atmospheric moisture. Maintain a night temperature of 65° to 70°, and 70° to 75° by day, the bottom heat ranging from 75° to 85°. Add some soil to the hillocks as soon as the roots protrude through the sides, being careful to have it warmed, and tread it firmly. Successional plantings will need prompt attention as the plants become fit, and successional sowings made in accordance with the probable demands according to the requirements of individual establishments. The linings of dung-heated frames must be duly attended to, using only sweetened material, as crude material not infrequently causes irreparable mischief.

CUCUMBERS.—Plants in full bearing will need copious supplies of weak liquid manure, and where the drainage is efficient and the roots in good condition, there will be little fear of applying it too frequently. The night temperature should range from 65° to 70°, though on very cold nights 5° less will be more safe, 70° to 75° by day artificially, and 80° to 85° with sun heat, closing at 85° and rising up to 90°, with plenty of moisture in the house, keeping the evaporation troughs filled with liquid manure. Gradually remove old lateral growths and old leaves, and replace them with young shoots pushing from the leading shoots, and this duly attended to will provide for a good successional supply of fruit. In tying the young shoots leave sufficient space in the ligatures for their swelling, and train them evenly and not too thickly, leaving sufficient space for their exposure to light and air, and thereby insure a thoroughly solidified growth.

Young plants turned out in hillocks or ridges should be stopped when they have reached the third or fourth wire of the trellis, and the shoots resulting must be tied in as they advance in their proper positions, being careful not to crowd them, and do not be in a hurry to take fruit from them, or only in very moderate quantity at first. Add some warmed soil to the sides of the hillock as the roots protrude, and continue this until the allotted space is filled. See that dung-heated frames have proper attention in liming, and should there be any fear of rank steam arising it will be the safest plan to tilt the lights a little at night to allow of its escaping. Fermenting material should be kept in readiness for that purpose, and also for making fresh beds. Make successional plantings and sowings according to the requirements. Provide sufficient night covering of mats or other material.

PLANT HOUSES.

Stove Ferns.—The Ferns grown in this department may now have a top-dressing over the soil, or be potted if they need it. When plants have once been placed in large pots, and it is not necessary to increase their size, they will do well in the same size for several years, provided they are judiciously supplied with stimulants during the growing season. With young stock the case is different if it is desired to grow them into a larger size as rapidly as possible, for these will need potting annually and often

again during the season. Care and judgment are needed in this operation, for some Ferns are weak growers, and large pots would prove detrimental. Strong-growing and free-rooting species may with safety be given liberal root space. Further, some are inclined to root deeper into their pots than others, and thus require less drainage. Others are merely surface-rooting, and to do them well they require to have the pots in which they are placed more than half full of drainage. For these varieties shallow pans are decidedly preferable, but each cultivator must in this matter be guided by the nature and condition of the plants. When Ferns are to be grown on it is a mistake to disturb and injure their roots by trying to pick out some of the old soil from amongst them; the drainage only need be removed and the roots injured as little as possible. Davallias, and such Ferns that require potting but do not need larger pots, may have portions removed from the outer edge, which will allow of fresh compost being added. The creeping rhizomes will soon reach the sides of the pots again and the plant be as large as ever. Adiantums and similar plants may have a good portion cut off them, or the roots split in two and potted in the same size pot. The plants will grow much more luxuriantly afterwards than if the ball was reduced and the roots seriously mutilated in order to place the plant again in the same pot. All Ferns that can be divided where an increase of the stock is needed may now be done with safety. These plants do well in a compost of fibry loam and peat with a liberal dash of sand and a little charcoal added. For strong-growing kinds a greater per-centage of loam may be used, and the reverse for those of weak delicate growth. The night temperature should now range about 60°.

Ferns for Cutting.—Those that have been grown cool and the majority of the fronds used may now be trimmed, repotted, and placed in heat. Pots 5 or 6 inches in diameter are the most suitable size, and if the roots have filled the pots the plants can be divided and again potted in the sizes named. One of the best systems of growing Adiantums and Davallias for supplying fronds for cutting is to place a good number of plants in wire baskets 8 inches in diameter. It is often difficult to find stage room for as many Ferns as are required for this purpose, but when grown in baskets they can be suspended at the back of vineries, or in any position where shade from bright sunshine and free ventilation can be given. This is the best of all plans by which a bountiful supply of fronds can be produced with a minimum of labour and trouble. Adiantum Pacotti is an admirable variety for supplying fronds for buttonhole bouquets, and should be grown where Ferns are in demand for this purpose. The plants started some time ago should be grown without shade for the present, and as cool as possible to harden the fronds.

Selaginellas.—Those grown in pans as specimens may be top-dressed or placed in fresh pans, as they will be likely otherwise to become bare and unsightly before the season is far advanced. To retain many of the denser forms in good condition they must be divided annually, while others should have a quantity of light soil worked in amongst them, so that they can start again and root freely upon the surface of the pans in which they are grown. This is a good plan with such as are employed for covering the ground amongst other Ferns planted out in rockwork, and saves the labour of replanting. Those that are divided must be shaded from strong sun until they are again established. They will soon commence root-action if damped with the syringe about twice daily.

THE BEE-KEEPER.

NOTES ON BEES.

BEFORE February 19th we had ten days of frost, the temperature sinking to 20°, but the wind then veered to the west. The bees felt the change, and were alert seeking for flowers, which are late and still unfolded. If it keeps mild the peameal will be taken advantage of, as already I observe some bees approaching the cylinder containing it. On the 1st of the month I observed young bees, which proved, as I anticipated, that the queen had commenced laying soon after the shortest day. Quiet during winter is one of the best points for the preservation of bees, and this quality is to be found in a high degree in the Carniolians. For four months several hives of these bees have remained quiet and never attempted to fly. Some would say they are hibernating, but this is not so, as during the coldest days of winter I observed them through the feeder in motion; besides, when the thermometer sank to 4° below zero during the severe winters, the colder it became the louder the hum. It is only when the atmosphere of the hive becomes damp that bees suffer from cold, provided there is no draught. If a hive is protected from rain and the crown well covered with meadow hay or sphagnum, it will endure the severest winter experienced in this country. If the atmosphere of the hive is kept dry the bees will keep up sufficient heat to protect them from the severest frost. If, however, it become sufficiently damp to lower the temperature and affect the bees, preventing them exercising their proper functions, then perspiration to a great extent ceases, and either disease or death ends their career.

All my hives being fitted with ventilating floors I do not require to clean them, but wherever solid floors are in use these should be cleaned now, and at intervals of about every two or three weeks until

May. Heaps of woollen cloths on hives hold much damp, and should be removed and thoroughly dried, the process not only insuring health and comfort to the bees, but destroys eggs of moths. Long meadow hay is far superior to woollen for covering hives, as it carries off the damp caused by the perspiration of the bees.

Queen wasps will in a short time be making their appearance, and as last autumn was very favourable for their increase and fertilisation, they are likely to be both numerous and capable of starting a new colony. The best way to keep wasps in check is to destroy them in spring; the queens then are as easily caught as the workers are in summer. A bottle with buttermilk or beer will attract them, and a few empty hives or inverted barrels or boxes are great inducements to them. Last autumn I had some plants of Figwort, which lasted in flower a long time. Not a bee frequented these till near the last, but the wasps were never absent from sunrise till sunset. It occurred to me at the time, where gardeners are plagued with these making havoc amongst their fruit, would it not be a good plan to cultivate these Figworts at some point furthest from the fruit? The wasps appeared so fond of these that they never attempted to attack either fruit or hives. For many years previous to last season wasps were not seen, but in all likelihood we shall have them plentiful enough now.

PREPARING OUR HIVES FOR SWARMING.

My chief object now is to forward all my hives so as to be teeming with brood and with bees by the end of May. Those hives with good stores and bees will do this better than by any art of the bee-keeper; but those not so well supplied must be attended to at once. With such I will give 8 or 10 lbs. of sugar as quickly as they will take it, for the following reasons. Hives with a paucity of bees and little meat when they begin to breed will not leave their brood to feed, and if the weather becomes chilly are sure to die. They will take food now more readily, and more brood will be put in than if fed under the stimulative system, and the bees become more restful. With weak hives care should be taken to keep the hive warm, and not expose it by opening at any time, while the doorway should be well contracted. By this glut of feeding the bees seal more brood than if given in small quantities, the bees are preserved, and after the first month increase more rapidly.

Strong hives, if properly managed, never fill their breeding combs with honey so as to crowd out the queen, because they cannot. Weak hives are only liable to do this, and only inexperienced bee-keepers permit it. It is a good plan to have all swarms off two or three weeks before the great honey glut, and to have all non-swarming hives just beginning to overflow, when it appears then in both cases the bees will enter supers at once. Then as they advance add others, and when any become sealed remove them. Where supers are used there is little difficulty or labour in removing or adding to them. Sections are more difficult of management, but where the rack and crate are one they cause less trouble than when they are handled singly; and where it is a matter of pounds, shillings, and pence the above plan will be found not only more expeditious but cheaper, as it requires neither separators nor glazing; but cheaper and better still is the sectional super I previously explained. The regular and quick finishing of supers depends greatly upon the form of the hive. In a narrow hive with the bees crowded to its extremities they seal and fill more regularly and quickly than in those not crowded to the outsides.

THE BATTLE OF THE HIVES.

There is nothing in the bee world I am prouder of than that I shared in the discussion which continued so long in the columns of this Journal to prove what constituted the best hives. After much opposition many are gradually leaving their whimsical notions and adopting the tiering system. Even those who thought they had passed that system now say "it is the most profitable as well as the most natural one." Such cheering words give us hope that more of our plans will be adopted.

EXTRACTING.

I have failed as yet to see any evidence to support extracting as being superior in anything unless in the quantity, and I hold that quality is preferable to quantity in honey. Even on that point, however, we want proofs that greater weight is obtained by the use of the extractor. So long as bees are judiciously managed and kept constantly at work night and day I think the difference will be very little. The quality of the honey is deficient, and many practise extracting from combs that have been bred in, which taints honey, reducing the flavour sometimes so much as to disgust rather than invite the appetite. I have for many years discontinued taking honey from brood combs, selecting only those never bred in or from supers, and from those sealed only. As the extractor can only remove unsealed or the thin kinds of honey it is of less value to the bee-keeper than if it did. An advocate of the extractor in a contemporary, while recounting his great success with it, cautioned his readers not

o extract any for exhibition purposes but what was sealed. But why not for all purposes? As deep combs are seldom sealed to the floor I cannot see where extracting will ever be very satisfactory unless some modification of the hives generally in use is adopted. Again our hive points to this reform—either forms of the Stewarton will do, the bees filling the shallow horizontal sections more quickly. These can be tiered in the usual way, when the finished ones may be extracted and the difficulty of having unsealed portions will be overcome. Another advantage these hives possess, which will meet the views of those who advocate inverting frames—when the hive becomes top-heavy these may be taken and placed underneath, and if the seals are a little broken the bees will carry it up. I cannot see anything in this plan to recommend it, and think it much better to encourage the bees to store it in the right place at first.—A LANARKSHIRE BEE-KEEPER.

THE BRITISH HONEY COMPANY AND THE BRITISH BEE-KEEPERS' ASSOCIATION.

It was not my intention to trouble your readers with any further remarks, but there are one or two points in "A Lanarkshire Bee-keeper's" communication in your last issue which need some comment. First he acknowledges that he was not aware that the British Bee-keepers' Association was a national institution. I am glad to find your correspondent admits this. His letters all tend to show that he has but a scant knowledge (if any) of the Association and its work, and his knowledge of the wants and requirements of the bee-keepers in regard to the disposal of honey is very much open to question. Let me inform your correspondent that since the year 1878 the B.B.K.A. has succeeded in establishing upwards of forty county bee-keepers' associations in England and Wales, and continues to aid and assist these associations as its funds permit. It sent out a deputation to Ireland at considerable cost, the result of its mission being to impart a great stimulus to bee-keeping and the formation of more than one bee-keepers' association in that country. During the past year it has devoted and is now devoting its energies towards the extension of the work in Wales, and it is quite probable that at some future date it will offer assistance to the cause in North Britain.

Your correspondent states: "The main question at issue remains unanswered of showing how they mean to aid the bee-keeper by maintaining a fair price for his honey." The answer is very simple—viz., by opening up new markets and thus creating a larger demand. It is for this purpose that the British Honey Company has been established.—PRO BONO PUBLICO.

MR. PEEL'S REPLY.

I AM quite surprised to see the Rev. H. R. Peel (page 161) attempting to evade the question of "A Lanarkshire Bee-keeper," particularly as he says he needs information.

Straightforward questions were asked, quoting Mr. Peel's own words, that he had purchased all rights in the *British Bee Journal*, "that bee-keepers might have a journal of their own free from any trade interests or bias of any kind." [The italics are his own.] What we want to know is, Is the *British Bee Journal* a bee-keepers' journal free from any other interests or bias of any kind? The question is plain and clear, but Mr. Peel carefully evades answering it, and tries to vainly make it out that the *British Bee Journal*, the B.B.K.A., and the B.H.C. are not closely connected, and have not any interests or bias of any kind antagonistic to those of bee-keepers. As long as he does this I will take the liberty of stating a few facts to indicate the contrary.

The editor and proprietor of the *British Bee Journal* is Vice-chairman of the B.B.K.A.'s Committee, and Chairman of the British Honey Company. The manager of the *British Bee Journal* is Secretary of the B.B.K.A., and also Secretary of the Honey Company. Four out of the seven Directors are members of the B.B.K.A. Committee, including its Chairman and Vice-Chairman, and thus able to control it; and I believe every other director and promoter of the H.C. are members of the B.B.K.A., and yet he tries to imply without actually saying it, that there is not a "close connection" between the three. It seems to me very much like the various papers published at your office, all being separate and independent of each other, but still very closely connected.

Though Mr. Peel says the *Bee Journal* has no trade interests whatever, I entirely fail to see how he can make this out. Is there any difference for the better between it now and when its late proprietor used to puff his business in it? It only appears to me to be a change of objects. But Mr. Abbott did give everyone a chance to write their thoughts or advertise opposition wares in it. I will now see if the *Bee Journal* is free from bias of any kind, and carried on in the interests of bee-keepers. How many complaints and friendly criticisms on the B.B.K.A. and its members has Mr. Peel withheld from publication? Did he not keep back some on the Bligh competition, which were calculated to open people's eyes to the utter absurdity of the rules, and prevent competition? Does not his journal team with flattery of himself, the Association, and his friends? Is he not at present trying to keep from the public a matter in connection with the I.H.E. instead of demanding the fullest investigation? If Mr. Peel and his friends are not careful they will sink the Association in their attempts to stifle this matter.

When we see him doing these things in his paper I think we have a right to say it is not free from bias of any kind, and also that it is not a

bee-keepers' own journal, and it remains with him to prove the contrary. I have just received a letter from a clergyman who knows Mr. Peel quite well, from which I make the following extracts:—"I know that the Editor of the *British Bee Journal* does not like fault-finding . . . but notwithstanding my regard for Mr. Peel, I do think that his paper is getting very weak and feeble." Mr. Peel has evidently not yet learned that public criticism is the best reflector, and he, a nephew of the great Sir Robert Peel, who in his day had millions finding fault with him, to his advantage.

When I received his issue for January 1st, 1885, I was astonished. On pages 8, 9, and 10 there is a long article signed L. L. Langstroth, published just as if it had been written for the paper; reprinted from *Gleanings* (American), pages 165 and 166, for April 1881, nearly four years ago. Personally I have no objections to "clippings," but I do object to their source being withheld. It destroys the value of a paper as means of reference, besides being a positive injury to the original writer—some of the statements therein contained being now out of date, and therefore an injury to him to have it implied that he makes them now.

I do not see any call to answer "A. B. M.," but I may refer to the National British Bee-keepers' Union. Men are in it who mean it to succeed and raise British apiculture into a national industry; its work is quite distinct from that carried out by the various Associations; it is really a bee-keepers' trades union, which as soon as fully organised will be of substantial benefit to all concerned. Even if the Honey Company were founded entirely on philanthropic grounds, the fact remains that it is capable of being used in a manner that renders it prudent for British bee-keepers to combine for their own protection.—A HALLAMSHIRE BEE-KEEPER.



TO CORRESPONDENTS

* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Books (*T. Aldred*).—Your inquiry is so indefinite that we are unable to answer it satisfactorily.

Peach Flowers (*Constant Reader*).—We cannot name Peaches from flowers, and those you sent without any packing were shaken to pieces, the petals covering the bottom of the box. The stamens indicate a deficiency of pollen, and this may be the cause of the fruit not setting. Cannot you apply pollen from another variety with the aid of a soft brush?

Marie Louise Violets (*C. Orchard*).—The flowers, some of them 1½ inch in diameter, are very fine indeed and good in colour, but not so dark as the excellent examples of De Parme and New York that were sent to us by Mr. Beachey and referred to on page 178, but they more closely resemble those of "F. G.," mentioned on page 170.

Violets Degenerating (*R. H.*).—Your Violets have reverted to the normal form by exhaustion. If you take strong runners and grow them in rich soil in an open position, mulching during the summer to keep the roots moist, you will produce stronger plants that may eventually afford large double flowers as before; but it would be better to procure fresh plants from a vigorous stock. Early in April is a good time for planting, and a number of young plants from the best runners should be established every year. Mr. Orchard, the writer of the article on page 143, has sent us flowers ten times larger than yours, and the two samples before us admirably represent superior and defective cultivation.

Zonal Pelargonium Leaves Curled (*C. H. S.*).—The cause of your Pelargonium leaves being spotted and curled is mainly due to too much water at their roots during the winter months, when the growth was almost at a standstill. The house, too, being low and no side ventilation being given would add to the evil. The disease is sometimes observable out of doors during cold wet sunless seasons. We advise you to propagate from clean plants only, and give less water, more air, with a little heat applied to maintain a drier atmosphere during the winter, and young plants will not be disfigured. Some varieties are sure to suffer worse than others, for all do not possess the same robust constitutions.

Gum on Camellias (*Borderer*).—The specimens will be very carefully examined, and in the meantime you might wash some of the leaves perfectly clean. Wash also a large square of glass, dry it and affix it over them, not over any leaves above them. If this is carefully done and the gumming continues, it will be evidence of exudation. We shall be glad if you will favour us with the result of this experiment.

Grapes in February (S. H. Contich).—We are obliged by your letter, but we were correct in telling you that the Grapes sold in London during the month named were ripened in the autumn. We are quite familiar with the system of forcing Vines in pots to have the fruit ripe in February; but we also know that as compared with the method of ripening the crop in autumn and keeping the fruit till spring, it is not worth practising from a commercial point of view. Very early Grapes are forced in some gardens for private use, but the fruit thus ripened in February is not anything like so large and well coloured as that ripened in the autumn, while the autumn crops are at least ten times heavier than those from Vines forced through the winter.

Tropæolum speciosum (K.).—This is the name of the species that grows so well in Scotland and produces such a brilliant effect on walls. It is quite hardy and is increased by division of the fleshy roots. We have not raised plants from seeds, but if we attempted to do so should sow in pots of peat and loam in a frame in April. If any of our readers have established plants from seed we shall be obliged by their communicating their experience for the benefit of others.

Seedling Cineraria (F. Z.).—We received the flowers quite right and have been awaiting the arrival of a letter pertaining to it. The only letter we have received from you on the subject reached us last Saturday, the 28th inst. Judging by the individual flower, we are glad to describe the variety a very good one and worthy of preservation if the habit of the plant is satisfactory. It does not, however, surpass, if equal, the best named varieties.

Hardy Annuals for Baskets (A Young Gardener).—*Eccremocarpus* is not an annual, but the plants will flower late in the season in which the seed is sown in heat in the spring. The mention of this suggests that you desire strong growers, and among the best of these are the Canary Plant (*Tropæolum peregrinum*); other forms of *Tropæolums*, commonly called Nasturtiums, would answer, with *Convolvulus*, *Convolvulus major*, and Sweet Peas; but without good culture, and especially care in watering and preventing the formation of seed pods, none of them would continue very long in beauty. The Creeping Jenny (*Lysimachia nummularia*) is excellent for baskets in the open air, especially in shaded positions; and drooping masses of Toad Flax, *Linaria cymbalaria*, have a pretty effect.

Tree Ferns (G.).—We have frequently seen the dead trunks of Tree Ferns employed for growing other Ferns of various kinds, the tops of the trunks being scooped out and filled with suitable compost. Any kinds of Ferns suitable for the temperature of the house may be thus "mounted," regardless of their genera. Small trunks in cases we have seen covered ornamentally with Filmy Ferns.

Hose-in-Hose Cowslips (L. B.).—We are not able to inform you from whom you can obtain seed of the strain referred to, and the best advice we can give you is to purchase a few plants and raise seed from them. Possibly as the season advances some growers who may have good stocks of these pretty and curious flowers may advertise plants or seed. We think we know the individual to whom you refer, and have applied to him for seed, but he has none for disposal; in fact, he appears to be in very much the same position as yourself, having lost the plants, and would like to raise others of the same character.

Manures for Grass and Fruit Trees (Inquirer).—The formula on page 142 we consider preferable to the other to which you refer for grass, but as the same kinds of manures have not the same effect on all soils you will not greatly err by trying both with the object of ascertaining which answers the best in your particular case. No one can recommend any particular kind of liquid manure for fruit trees without knowing the nature of the soil and the condition of the trees, and it would be very easy to waste money in this method of applying stimulants. Many trees, no doubt, might be improved by such assistance, but at least an equal number would be injured rather than benefited. Top-dressings of ground bones or superphosphate of lime are suitable for fruit trees that require more nourishment than the soil affords. The fertiliser alluded to can be had from agricultural manure dealers in nearly all market towns.

Exhibiting Fruit (D. B.).—In the absence of any stipulations to the contrary, such as one bunch of Grapes or one Melon to form a dish, more than one in each case can be staged without the exhibitor rendering himself liable to disqualification, provided the duplicate examples are of the same variety; but when it is necessary to "make up" dishes in the manner indicated the fact is not suggestive of superior cultivation, a point that would not be overlooked by the judges. If it were necessary to stage three small Melons to form one dish it would be regarded as a very weak dish indeed, and would tell heavily against a collection of fruit.

The Vine Weevil (J. L.).—The specimens you have sent are of *Curculio betuleti*, which is very destructive to the young leaves and growths of Vines on which the weevils feed during the night. We know of no more satisfactory method of eradicating the pests than by searching for them with the aid of a light and picking them off by hand. Some persons recommend spreading a sheet, then shaking the Vines briskly; but we have fortunately not had occasion to try this plan. Possibly, if you were to tie cotton wool round the stems of the Vines and smear it with tar it would check the movements of the pests. We should also clear away the soil from round the stems, adding fresh, and sprinkle the border if it is inside the house with petroleum mixed at the rate of a wineglassful to a gallon of soapy water, as the insects lurk in the soil during the day.

Seeding Primulas (Primula).—Healthy plants with active roots are essential, and if sown rather late so that they flower in spring instead of winter they will seed all the more freely. Plants in a weak state are practically exhausted with flowering, and cannot support seeds, which is more exhausting still. With healthy plants flowering now all that is needed is the liberation of the pollen and its application to the stigma of the flowers. To insure this it is advisable to use a camel-hair brush, but we have known the seed set freely by simply shaking the trusses during the forenoon of fine days. There is no "difference between male and female *Primula* flowers," as all the organs of fructification are present in each flower. There are what are known as the pin-eyed and thrum-eyed flowers; in the former the pistil protrudes beyond the stamens, and in the latter the stamens are longer than the pistil, which is hidden in the tube. The others seed the more

freely, but are not considered so attractive. When the pistil is not visible a little careful manipulation is needed for the pollen to reach the stigmas, and occasionally the tube is split open for this purpose in the case of special varieties.

Sowing Rhododendron Seed (Birdie).—Peat should be broken up and placed in a cold frame to the depth of about 2 inches, that placed upon the top being very fine. The surface must be pressed down and made as level and even as possible, and the seed sown towards the end of this month. It must not be covered, but after sowing give a good watering with a fine-rose can. Great care must be taken that the surface never approaches dryness, not even after the seedlings appear. The lights of the frame in which the seed is sown should be whitewashed and kept close to prevent evaporation, and even when this is done it will be necessary to lay mats over the frame during very bright weather. As soon as the surface of the soil is green a little air must be admitted to prevent the seedlings damping off. They must be gradually exposed to light and air until the lights can be drawn off; this should be done at first during dull or showery weather, but care must be taken that the soil in which the plants are growing does not become saturated. When the seedlings are large enough, say during the early part of July, they should be pricked off into other frames or boxes, where they can be shaded until established and protected with lights during the winter. It is not necessary to prick off the seedlings singly; on the contrary, they may be transplanted in little patches, leaving an inch or a little more clear space between each patch of plants. The next season they will fill up this space. They should remain undisturbed during the winter, giving them the protection of mats or fern during severe weather. In spring, when all fear of frost is passed, the young plants may be transplanted 6 inches apart, so that a small hoe can be used amongst them.

Enemies of Mushrooms (J. E.).—In the last edition of Wright's "Mushrooms for the Million" you will find more than "one suggested remedy" for the destruction of snails, woodlice, and other pests. Solutions of salt, hellebore, and quassia are all referred to, also Mr. Bateson's sugar and plaster of Paris application. We cite from pages 93-94:—"Slugs and snails are often very annoying. If the beds are carefully examined at night with the aid of a lantern in all probability a number of the depredators may be caught and destroyed. Heaps of brewers' grains or bran placed near the beds will, if examined after dark, often be found covered with snails, and if these in turn be covered with salt they will do no further damage. Woodlice are occasionally troublesome; pieces of parsnip boiled in a solution of arsenic are readily eaten by them, and this forms their last meal. The poisoned baits should be placed in small flower pots and must be kept from fowls. When a number of small thread-like creatures appear (Millipedes) their presence indicates that the manure has not been sufficiently heated and purified. They are difficult to destroy without injuring the beds. A suggested remedy is to mix two ounces of hellebore powder into a creamy paste, then stir it well into a gallon of water, and pour it on the beds; if Mushrooms are growing, it must be poured between them, not on them, as the hellebore solution is poisonous. Occasionally a number of active and very minute insects infest Mushroom beds, and especially if the manure is too dry; from 1 to 2 ounces of salt dissolved in a gallon of tepid water will usually destroy the insects, and may improve the beds; if this fails, the hellebore mixture may be tried, or a solution of quassia, made by boiling an ounce of quassia chips in a gallon of water for twenty minutes, and applied in a tepid state; but, as above advised, it must not be poured on, but between any Mushrooms that may be appearing. Mr. Charles Bateson says:—"If sugar and plaster of Paris are mixed together in any proportion, strewn about an inch thick all round and on the top of the bed, the insects will speedily disappear; at least I have found this simple mode efficient. They eat it for the sake of the sugar, and I suppose the plaster of Paris must harden in their stomachs and so kill them." Mr. Bateson's remedy is worth trying."

Names of Fruits (C. S.).—No. 1, Spanish Warden; 2, Ne Plus Meuris. The plant is *Peperomia Saundersi*. (A. Haggart).—1, Ribston Pippin; 2, Reinette de Canada; 3, Herefordshire Costard; 4, New Northern Greening; 5, Hoary Morning; 6, Not known. (A. B.).—Dumelow's Seedling. (J. W.).—No. 1, Not known. 2, Powell's Russet. Duke of Devonshire is very good, but we think it is inferior in flavour to Powell's Russet.

Name of Plant (James Pound).—*Pellaea rotundifolia*.

COVENT GARDEN MARKET.—MARCH 4TH.

BUSINESS comparatively stagnant. Prices unaltered.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples	½ sieve	2 6 to 4 6	Oranges	100	4 0 to 7 0
Chestnuts	bushel	16 0 0	Peaches	per doz.	0 0 1 6
Cobs, Kent	per 100 lbs.	55 0 0	Pears, kitchen ..	dozen	1 0 3 0
Currants, Red .. .	½ sieve	0 0 0 0	„ dessert	dozen	2 0 6 0
„ Black	½ sieve	0 0 0 0	Pine Apples English	.. lb.	1 6 2 0
Figs	dozen	0 0 0 0	Plums	½ sieve	0 0 0 0
Grapes .. .. .	.. lb.	3 0 6 0	Strawberries.. ..	.. lb.	0 0 0 0
Lemons .. .. .	.. case	10 0 15 0	St. Michael Pines	.. each	3 0 7 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes	dozen	2 0 to 4 0	Lettuce	dozen	1 0 to 1 6
Asparagus	bundle	7 0 8	Mushrooms	punnet	0 0 1 6
Beans, Kidney .. .	100	2 0 2 6	Mustard and Cress	punnet	0 2 0 4
Beet, Red	dozen	1 0 2 0	Onions	bunch	0 3 0 0
Broccoli	bundle	0 9 1 0	Parsley	dozen bunches	2 0 3 0
Brussels Sprouts	.. ½ sieve	2 6 3 0	Parsnips	dozen	1 0 2 0
Cabbage	dozen	0 0 1 0	Potatoes	cwt.	4 0 5 0
Capsicums	100	1 6 2 0	„ Kidney	cwt.	4 0 5 0
Carrots	bunch	0 3 0 4	Rhubarb	bundle	0 4 0 0
Cauliflowers	dozen	2 0 3 0	Salsafy	bundle	1 0 0 0
Celery	bundle	1 6 2 0	Scorzoneria	bundle	1 6 0 6
Coleworts	dcz. bunches	2 0 4 0	Seakale	per basket	1 0 1 0
Cucumbers	each	0 6 1 0	Shallots .. .. .	.. ..	0 3 0 0
Endive	dozen	1 0 2 0	Spinach .. .. .	.. brshel	2 0 4 0
Herbs	bunch	0 2 0 0	Tomatoes .. .. .	.. lb.	1 0 2 0
Leeks	bunch	0 3 0 4	Turnips	bunch	0 4 0 0



HOME FARM

THE BREEDING FLOCK. ABORTION.

OUT of a flock of sixty ewes in lamb there have been twenty-eight cases of abortion within three weeks. The sheep were upon grass till shortly before Christmas, when they were put upon Turnips, all of them apparently being in a healthy condition. The first case of abortion happened towards the end of January, and although they were removed from the Turnips they continue to lamb prematurely.

Such was the gist of a letter recently sent to us by a correspondent, and the occurrence of so bad a case renders it desirable that the fullest and latest information of the cause of this evil and its remedy should be placed before our readers. We may as well say at once that, judging solely from the statement contained in the letter, we consider the cause of abortion in our correspondent's flock to be unwholesome food, for that is what a diet consisting solely of Turnips undoubtedly is for ewes in lamb, especially at that late period of gestation when so much of the nutriment derived from the food is absorbed by the foetus. There would probably have been no losses from abortion had the ewes been given a pound each of dry food daily from the time they were first put upon Turnips. The dry food should consist of a mixture of crushed oats, bran, pea and bean meal, and chopped hay. Many, perhaps most, flockmasters would substitute cake for the meal, but in these hard times we avoid heavy bills for cake. In addition to this the flock should have been taken from the Turnips at night to a dry pasture, or, better still, a well-littered fold with well-filled cribs of Oat straw or hay.

In his recent report on abortion in ewes to the Council of the Royal Agricultural Society Professor Axe says, "So far as I am now capable of forming an opinion of the origin of the disease two factors appear to me to have been specially concerned—viz., long-continued exposure to wet, and the exclusive or too free use of roots as an article of food. The first-named cause appears not only to have operated directly by lowering the temperature of the body and suppressing the function of the skin as an eliminating organ; but indirectly also (1) by exciting and maintaining a painful ulceration of the feet (foot-rot), and extensive inflammations of the skin of the legs and belly, thus entailing acute and protracted suffering and weakness; (2) by rendering the soil so deep, heavy, and slippery that ewes advanced in pregnancy have suffered great fatigue and constitutional disturbance, while the well-nigh water-logged condition of the land has compelled them to occupy the standing posture for long periods together, and by thus depriving them of rest had led in numerous instances to a state of exhaustion altogether inconsistent with the retention and maturation of the foetus.

"The mortality and loss has undoubtedly in all cases been seriously aggravated by the influence of the discharges from the sick on the more healthy portion of the flock, and in some outbreaks there has been reason to suspect that such accidental causes as over-driving and fright have played an active part in producing the mishap. As the breeding season is now commencing it may be advantageous to the members of your Society if, pending a detailed report of my investigation, I briefly point out what I consider desirable for the better management of the ewe flock in relation to the subject in question. In this connection it is important to remark that the practice of winter feeding, more or less general in this country, condemns the breeding ewes to subsist exclusively on roots during the most trying months of the year, and over a period when the demands of pregnancy call for a liberal and sustaining diet; nor is it in this alone that the worst feature of our winter feeding exists.

"The custom of restricting the diet of the ewe to the filth-laden 'shells,' or residue of roots left after the folding of hogs, is even still more to be condemned, not only as a fruitful cause of abortion, but of other diseases even more serious and fatal. As a matter of precaution, then, I would say for the immediate guidance of your Society, that while as a matter of expediency it may be allowable to continue to fold ewes after hogs as is generally practised, it is at the same time indispensable to the health and vigour of the flock that a fair amount of fresh roots be also given, as well as wholesome dry food, in quantities according to the nature of the season. From the time ewes are placed on Turnips to the time when they lamb down, I am of opinion that wholesome dry food is imperatively demanded, and that disregard of this rule of diet exposes both parent and progeny to many fatal disorders. I would also advise that salt be kept constantly in the fold, so as to be accessible at all times. When the

air is bad the flock should be removed to higher and drier ground. The practice adopted by many of our best sheep farmers of changing the fold for the open pasture once or twice a week cannot be too highly estimated as a means of maintaining a healthy condition of body and warding off disease."

We have no need to advance opinions in support of our views, practical results by far too numerous to quote are at hand. One flockmaster declares exultingly that out of a flock of 400 ewes he has only lost three. "The ewes," said he, "have not had a single Turnip during the winter, and they were never more healthy." Yet he did not object to a moderate quantity of Turnips with mixed dry food. Another, instead of Turnips or Swedes prefers Ox Cabbages, which form the chief article of diet for his sheep in winter, Mangolds being used when the Cabbages are finished. He, too, gave mixed dry food, sometimes pulping the Cabbage with it. With gentle treatment we must therefore have careful judicious feeding, tolerably dry firm beds—preferably a yard or fold with fresh littered straw daily—and the risk of losses from abortion will then be reduced to a minimum. Ewes that have suffered from abortion should not be let breed again, but should be fattened and sold.

WORK ON THE HOME FARM.

Horse and Hand Labour.—The sowing of artificial manure upon autumn-sown corn, grass land, including Rye grass and Clover, and other seeds is finished, manure is also mixed and put up in bags in readiness for the sowing of spring corn and roots, and the planting of Potatoes. This is a matter to which we give close personal attention, and the men are not left alone till the mixing is finished, the various mixtures put into bags, and the correct number of bags put aside for each field or meadow, with a label, on which is written the name of the field, with the weight and number of the bags. This is also entered in the manure book, so that we can at any time see at a glance what is the value and quantity of manure used for each crop. Now is the time to apply surface-dressings of half-inch bones to grass land at the rate of half a ton per acre. This is an expensive dressing, but it is one for the future as well as for the present, imparting fertility to the land for several years. It is a good plan to do a certain number of acres yearly till the whole of the grass land is done, so as to spread the expense over several years. Ploughing and carting faggots and hop poles has furnished full employment for the horses. New hop poles are being prepared for use by having the sharpened ends, which are put in soil, first of all steeped for about seven hours in creosote, kept hot in a tank by means of a furnace beneath it. It is important to procure the creosote from a sure source, much of it being so shamefully adulterated as to be worthless.

Live Stock.—Cows are now fast calving, and much extra care and attention must be given to them. Cows kept solely for stock-breeding have the calves left with them as long as they require milk; but dairy cows are taken from the calves at the third or fourth day after the birth of the calf. For awhile the calf is allowed to suck twice daily, and for strong calves this is sufficient, or at any rate it answers fairly well. But delicate or weakly calves are liable to suffer from attacks of indigestion and diarrhoea, owing to such long fasts and the rapidity with which it crams itself with the too-long-delayed meal. As a matter of precaution all delicate calves should have a moderate mid-day allowance of milk, as well as a full supply at morning and night. This extra meal strengthens the animal, and staves off diarrhoea. When diarrhoea occurs prompt measures must be taken to check it, or the animal may become so much exhausted that it cannot recover. First clear the stomach of irritating food and acrid discharges by giving a dose of 1 to 2 ozs. of castor oil, and twenty to forty drops of laudanum according to the size and strength of the animal. See that it is kept in a clean, airy, warm building, and give forty drops each of laudanum and sulphuric ether in a little water three times daily should the indigestion continue. At intervals of three hours 4 to 5 ozs. of new milk, diluted with an equal bulk of lime water, is also recommended.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain	
	Barometer at 29.88 and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1885.											
February.											
Sunday	22	29.875	38.8	37.8	S.	38.0	45.8	29.8	48.1	25.7	0.053
Monday	23	30.020	42.6	41.9	S.E.	38.6	51.4	33.2	74.4	26.7	—
Tuesday	24	29.798	46.8	42.4	S.E.	39.8	56.2	42.4	79.2	34.6	0.073
Wednesday ..	25	29.932	47.6	47.2	S.	41.0	52.8	45.4	59.3	37.5	0.106
Thursday	26	30.111	46.7	44.8	S.	41.8	51.1	42.4	67.4	35.7	0.164
Friday	27	29.856	48.8	46.8	S.	42.8	52.4	46.2	59.8	43.2	0.048
Saturday	28	29.948	46.8	45.9	S.E.	43.4	53.2	44.8	62.2	39.1	—
		29.929	45.4	43.8		40.8	51.8	40.6	61.1	34.6	0.444

REMARKS.

22nd.—Damp and drizzly day; moonlight night.
23rd.—Dull early; fine bright day.
24th.—Fine and bright.
25th.—Wet morning; fine afternoon and evening.
26th.—Cloudy, with occasional spots of rain.
27th.—Wet morning; fair afternoon, with a little sun.
28th.—Dull and damp; bright for a short time in afternoon.
Although there was a little frost early on the 22nd, the rest of the week was extremely mild, and the average temperature of the week about equal to that usual in the middle of April.—G. J. SYMONS.



COMING EVENTS

12	TH	Royal Society at 4.30 P.M.
13	F	Quekett Club at 8 P.M.
14	S	Royal Botanic Society at 3.45 P.M.
15	SUN	4TH SUNDAY IN LENT.
16	M	
17	TU	
18	W	Society of Arts at 8 P.M.

LILACS FOR FORCING.



HERE Lilacs are required in quantity for cutting and decoration a judicious system of preparation should be practised. If this is done on the principle that will be detailed a good supply for both purposes can be insured annually. Unfortunately in many gardening establishments a very loose and careless method of preparation is practised. In many instances no real system is followed, for the plants re-

quired are lifted from the shrubby borders, forced, and then turned out again to die or recruit themselves as best they can. Such practices cannot be too strongly condemned, for in addition to the destruction of many plants and the enfeebled health of others the beauty of the shrubby borders suffers in consequence. Plants lifted from the open borders are often large ungainly specimens that almost require special places in which to force them, and even when in flower they cannot be taken into positions where they would be appreciated until the whole of their flowers are used if required for cutting, as they have generally bare unsightly stems with the flowers only on the extremity of the shoots.

Plants of the most suitable size for forcing to supply cut flowers are bushes that do not exceed 4 feet in height. Bushy plants of this description can be placed in pots of a convenient size and readily forced in almost any house or position, which is not the case with those of very large size. In addition they can be employed in the conservatory or other structures kept gay while the flowers are cut without proving objectionable, and thus they are made to answer two purposes. When plants are required solely for decorative purposes in small pots they should be grown on the same principle as those little budded specimens that are annually imported from the continent in autumn. It has been said that it is impossible to grow plants to set their buds and flower with the same freedom as imported plants; but such is a great mistake, for our plants grown in that way have flowered as well as any imported plants.

The Persian varieties of Lilac are useless for forcing. They are comparatively scentless, and will not last long when cut. The variety known as Charles X. is well adapted for forcing either in the light or dark for the supply of white flowers. Next to this is the large-flowered coloured variety commonly grown in gardens; it can be forced freely and does well in the dark. White-flowered varieties are of little use for forcing, the flowers having generally a greenish appearance.

To prepare Lilacs satisfactorily for forcing they should be lifted every alternate year. The plants are soon ruined if subjected to forcing annually, but when given a season's rest they recruit themselves and continue in health for many years. When this system is practised double the number of plants must be cultivated that are required for one year, then a batch of well-prepared plants can be lifted annually. They should be grown in the open borders in a sunny airy position in moderately rich soil, and I have found them do

well in light as well as heavy soils. Great care must be taken that they are not shaded by trees, or the buds may fail to set freely. Plants lifted with plenty of roots and earth attached and transplanted at the present time would set buds fairly well to be of service for forcing another season. It is getting rather late for planting, but where good roots can be insured it may safely be done, and the plants will make satisfactory growth provided they are syringed for a week or two, and kept watered at their roots during dry weather. Lilacs should be slightly cut back after they are planted, which induces strong vigorous shoots about 1 foot in length, and from these the most and best flowers are produced. Prune annually to keep them for many years of a suitable size for the purpose. Those that have been forced are pruned directly the flowers have been cut or are faded, one pair of buds only being left on the previous season's wood; by this means all the tender foliage that may have started during the forcing is removed, and they are gradually hardened, and are then planted outside directly the weather is favourable. The season after forcing the growth is not very strong, but they establish themselves, and the growths made are again pruned after the foliage has fallen. The following season these plants make strong growth, and will be ready for lifting directly the leaves have fallen. When lifting the plants for potting as many fibry roots as possible should be crammed into the pots. Too strong and luxuriant growth must not be encouraged, or the wood will not ripen thoroughly.

Young plants suitable for decoration in 6 and 8-inch pots similar to those imported annually are raised in the first instance by budding or grafting. Any strong-growing kinds will do for stocks which are raised from cuttings of ripened wood inserted in autumn or winter or from root cuttings, the Lilac being very profuse in throwing suckers. The stocks after they are once rooted soon grow freely enough for budding or grafting the same as Apples and Pears. The former should be first practised by inserting a bud of Charles X., on both sides of the stock directly opposite and about 4 inches above the ground. These may be left until early spring, when any that have missed may be regrafted. If the scion has one wood bud it will be ample, one being placed on each side the same as the buds. In early spring the stock can be cut off close to the buds, and vigorous growth will follow. The continental plants are all established in pots, and many of them appear as if they were potted in autumn with the buds established ready for starting into growth to form flowering shoots the following season. The growths issuing from the buds are allowed to extend some length, and are then shortened, and the lateral growths, which are six or eight in number, form the flowering shoots. All are not prepared thus, for some have been cut hard back, and have evidently taken another year in their preparation, which course I shall recommend, as plants that will flower with certainty cannot be produced in this country in one season. The buds and grafts must be allowed to grow the first season undisturbed, the same as maiden Apples or Pears, and attain as much strength as possible. These must be carefully lifted in early autumn before the leaves fall, and be potted in good fibry loam and one-seventh of manure in 6 or 8-inch pots, according to their size and strength. If lifted as soon as the wood is ripe, and some time before the foliage falls, they will make roots in their pots and become partially established before winter. The soil must be pressed as firmly as possible into the pots, the plants plunged in a shady position, and the foliage syringed two or three times daily. By this care in autumn a large quantity of fresh roots will be formed, which will assist the plants wonderfully in starting vigorously the following spring.

The winter treatment is very simple, for the plants can remain plunged outside, or they can be placed in a cold frame. Any time during the winter—say in January—the plants can be pruned, leaving about 4 inches of the wood made above the union with the stock. These can be

plunged in a warm sunny position and grown outside until they have ripened their wood and set their flower buds in autumn. The plants will produce from six to eight or more shoots, varying in length from 8 inches to 1 foot. If more than the latter number are produced they should be removed. Leaving the plants outside is preferable for those that are required for forcing the second year—say the weakest plants—while the others may be started in cold frames, thus affording a longer season's growth. In good seasons the plants do not need this care, for they will set flower buds freely enough if subjected to outdoor treatment. When in frames they are brought forward as cool as possible, merely being protected from cutting winds and spring frost. Those started in frames are grown hardily, and when the weather is favourable and frost past the plants are plunged in a sunny position. The soil around the roots at plunging time should be in a moist condition, and a showery day must be selected for the operation. The past summer was remarkably dry, and plants plunged in January and February grew strongly and set abundance of flower buds, but were never watered, thus showing the great saving of labour effected.

When plunged Lilacs often root through the hole in the bottom of the pots and over the top as well. At lifting time the whole of the roots outside the pots are removed, and we have not found the slightest injury result. The plants are lifted out of the soil and the roots cut off in autumn, when the wood is well ripened before the foliage falls. They are left outside until frost, when they are brought under glass ready for forcing.

These dwarf specimens are pruned close back after flowering and started in the same way as the bush plants for cutting, and then plunged outside. They do not make a strong growth, but some of them would flower fairly well if required to do so. In early autumn, if they need potting, this is done before the leaves are off. In 10-inch pots they remain healthy for a long time, giving an annual top-dressing of rich artificial material and a little artificial manure. From these pots they are planted out, as described, for the supply of cut flowers. In every instance care must be taken to remove as many suckers from the roots as possible.

Those who have not time to graft or bud the plants, and want flowering specimens while home-worked ones would be in preparation, should purchase sufficient for two seasons and then prepare their own as described. The batch purchased for the first year could be prepared for flowering again in the third season.

Few plants can be forced into flower with such ease as the Lilac, for it will bear any heat. The closer and warmer the atmosphere in which the plants are forced the paler and lighter-coloured the flowers are. If forced in strong heat in a pit without admitting air, and a double thickness of mats placed over the lights, the flowers will be nearly white. When the flowers are wanted of their natural colour they should be allowed to expand under cool conditions. It is remarkable that, however high the temperature may be in which Lilacs are forced, they do not flag when removed to a cool structure. The cooler the house in which the flowers are developed the more fragrance they possess.

White Lilac flowers are produced by forcing the plants in a dark place, such as the Mushroom house, but early in the season more heat must be employed than is maintained in this structure.—WM. BARDNEY.

YOUNG GARDENERS.

IN continuing my remarks I am very anxious that all under gardeners who read them may take them in the same spirit in which they are written, and may not think I am taking too much upon myself. It is my earnest desire that in the future we may hear less of "degeneracy" than has been the case in the past. This desire has led me to write the following.

It seems to me that our duty to those under whom we serve is to be obedient at all times, even though this may at times seem to involve a sacrifice of principle. I think we too often forget that a man who

has spent twenty or more years in the profession has had opportunities for testing the suitability of certain means to bring about certain ends which have never been ours. We ought always to remember that the head gardener is responsible in the event of failure and not ourselves.

And now a word on another subject. Many young men when reproved, be it ever so justly, make a point of returning an answer, frequently an impertinent one. I have always observed that such a young man seldom makes a long stay in any establishment where discipline is deemed of any importance. The man who at the outset of his career makes up his mind to cheerfully obey all orders, starts with a very good prospect of success. As a rule, head gardeners have troubles enough without this as an additional one.

Next as to our duty to one another and to ourselves. In speaking of this I need not say anything about taking an interest in our work, for as every young man knows, this is the first condition of success. No young gardener can ever hope to rise in his profession unless he makes up his mind to do everything, be it crocking a pot or stoking a fire, as well as it is possible for it to be done. This has been urged over and over again in our Journal, and thus requires no enlarging upon here.

My experience of both life leads me to say that many young men do not utilise their spare time to the best advantage. During the winter months there are two or three hours every evening which might generally be spent in acquiring knowledge which is of great value in after life. There is drawing, freehand and geometrical, and numerous other subjects which I need not enumerate. It is sometimes difficult, in a bothy where there are several young men, to obtain that quiet which is so essential to the pursuit of these studies, but we can generally effect our purpose by the exercise of a little tact and patience. And then, again, there is reading. How much we can improve our minds by reading the horticultural journals which are now so numerous and so good. I do not mean scanning the pages, but studying, and taking note of, what we read. Your correspondent, "Sylvanus" (page 9), gave us some excellent advice on this point.

In conclusion, I would respectfully urge my fellow under gardeners to keep from spending their time in profitless amusements. In most bothies there is one black sheep who will do his best to lead all the others astray; but if we keep in the right path we shall be amply repaid in the long run. In these days of high pressure in gardening, as in all other vocations, the eye and the hand require to be in a healthy condition, and this is not to be effected by spending one's time in questionable amusements.

Finally, let us all do our best to prove that there is really no "degeneracy" in the existing race of young gardeners, and that when our seniors shall have passed away there shall be among us some who are capable of worthily filling their places.—T. C. D., *Herts.*

STORING APPLES.

I WAS very pleased to see at page 107 a few useful hints from Mr. Bunyard on this subject. There is not, I think, the least doubt of the truth of his statement that we do generally gather not only early Apples, but also the late varieties—as well as Pears—too soon, and before they are thoroughly ripened, with the result that they shrivel, even after the most favourable seasons for ripening, and although stored in the most perfect fruit room.

Mr. Ingram of Belvoir is one of the few gardeners who has fully recognised and appreciated the advantage to be derived from late gathering, and there are, perhaps, few fruit stores that can compete with his at the close of the season for the abundance of its plump well-kept choice fruit. I have more than once observed the trees both on the walls and in the orchards there hung with fruit for weeks after everyone else had stored theirs; and on one occasion several years ago I remember going through the garden very late in autumn, and seeing the trees and fruit in the early part of the day thickly covered with hoar frost, a condition which would have alarmed less experienced and less acute observers. The gardens and orchards there are certainly in a sheltered position, and the soil is of a very stiff nature, both of which conditions are undoubtedly favourable to late hanging. The late Mr. Tillery of Welbeck was also a great advocate for late gathering, as was also Mr. Ingram of Frogmore in days gone by, both of whom were acknowledged to be first-class fruit cultivators. In exposed positions or on shallow dry soils it may be impracticable to keep the fruit on the trees so long; but even in such situations it is better to lose a few fruits by falling than to gather them so early as is customary.

The most excellent fruit store I have ever known was a long shed, the walls of which on each side were only 2 feet high, with a sharp pitched roof of thatch 3 feet in thickness, and with an opening in each gable for ventilation; at the southern end was a plantation of trees and shrubs which effectually screened the store from the early morning and midday sun. It was divided into three compartments—one for early, the second for the medium season, and the third for late fruit. The floor on each side the central path was perfectly dry, and on it was placed a layer of powdered charcoal, and on this the bulk of the fruit was placed, while on

narrow shelves, arranged at intervals on each side immediately under the roof, was placed the choicest fruits. In this store the temperature varied very little, and the openings at each end were never quite closed even in the severest weather. The fruit in this rough and comparatively cheap store always kept admirably; not only were they comparatively free from shrivelling, but whether from the fact of having slight ventilation at all times, or that the thatched roof absorbed the superfluous moisture arising from the fruit, I cannot say, but there was not the usual tendency in the fruit to become discoloured soon after removal from the store, as is too frequently the case with late-kept fruits—an objection which is almost as bad as shrivelling. Mr. Bunyard refers to the tendency of fruit to crack, and if I understand him correctly he infers that this is sometimes occasioned by the cells being filled to repletion by being allowed to hang longer on the trees. This may be the case; but is not this more frequently to be attributed to a too damp and not sufficiently ventilated fruit store?—VITISATOR.

ANEMONE THALICTROIDES.

THIS species in appearance is more a *Thalictrum* than an *Anemone*, though botanists seem disposed to class it with the latter. It has beauti-



Fig. 36.—*Anemone thalictroides*.

ful *Adiantum*-like foliage, slightly glaucous, and not unlike that of *Iso-pyrum*. In April it produces umbels of white flowers each about an inch across. It appears to be rather fastidious as to soil, and a good plant of it is not often met with. Being an American woodland plant partial shade with deep peaty soil seems to suit it best, where it grows from 6 to 9 inches high. There is a double variety with smaller flowers, but it is in no way more ornamental than the normal form. It is usually propagated by division, but seed of this as well as of most of the other rarer *Anemones* can be had from the Erfurt seedsmen. To give a long season of growth the seed should be sown early in March in gentle heat, the plants being grown on in boxes and planted out during June.—R. D. T.

A HYBRID ECHIUM.—The gardens of Madeira are remarkable for the neglect of native plants. This is due in part to indigenous indifference,

and also to a preference for familiar forms amongst people who migrate hither from various regions, though chiefly to the temptation to test the facilities of growth and naturalisation in a moist and equable sub-tropical climate. Hence it is often easier to import species peculiar to Madeira than to find them in their native place; but none the less do these rocks abound with conspicuous examples of interesting genera. I have cultivated for many years two large *Echiums* upon the terraces of the Luinto do Valle, 300 feet above the sea—namely, *E. fastuosum*, the Madeiran littoral species, a perennial shrub 3 or 4 feet high, with hairy light green leaves and branching stems crowded with scorpioid racemes of light-blue flowers with white stamens. And secondly, *E. simplex*, the giant Canarian species maturing in Madeira in the second year. This remarkable plant has large, smooth, silvery leaves, and terminates its growth in one unbranched stem densely packed with folded flower-stalks bearing pure white blossoms, and forming a pyramid reaching sometimes 14 feet in height. *E. simplex* dies after flowering. The flowers in both species last three to five weeks, and the unfolded flower-stalks measure 2 to 3 inches in length. Until 1882 the two *Echiums*, though growing together and having their scentless flowers freely visited by bees and insects for their abundant nectar, had remained distinct; but, in 1883, after introducing a swarm of Ligurian bees from England, I found that a cross-fertilisation had been effected, which has left me very few examples of *E. simplex*. The hybrid *Echium* possesses the leaves of the giant plant, and the stem merely bifurcates or branches sparingly. The flowers are tinged light blue, and the perennial habit of *E. fastuosum* is expressed by a continual growth of the flower racemes, which, after flowering for two years, measure 26 inches in length, and are still unfolding. The seeds of this hybrid have not germinated. I am now preparing to effect a cross between *E. simplex* and the handsome mountain *E. candicans* of this island at my country residence, 2000 feet above the sea. *E. candicans* and *E. fastuosum* have frequently blended, producing plants less new in structure than in habit; but such hybrids have been quickly lost, either in sterility or reversion.—MICHAEL GRABHAM, Madeira (in *Nature*).

NOTES ON VEGETABLES.

CHOU DE BURGHLEY.—Through Mr. Gilbert's kindness in sending me some seed I am now cutting the famous Chou. After reading so much in praise and in disparagement of it I was very anxious to form my own opinion, and a few days ago I was enabled to do so. I cut some rather too young perhaps, but still I was able to form an opinion, and a very favourable one it is, for I consider the flavour quite distinct from Broccoli or Cabbage, but very delicious. The outer leaves were rather strong, but the blanched inside was not at all so, but very marrow-like. It comes in at a time when greenstuff is getting scarce, and does not necessarily occupy room for so long as one of your correspondents once stated. I planted mine out between rows of Potatoes in July, and shall cut them this and next month, after which I shall plant Celery, and in the meantime I am putting in double rows of Longpods at intervals of 2 yards between the rows of Chou, so that for my part I do not think they will occupy the ground longer than any other vegetable, nor prevent us getting in another crop in good time.

LONGPOD BEANS.—When planting second early Potatoes I invariably drop a Bean with every other Potato in alternate rows, and by so doing I obtain my finest pods for exhibition. No vegetable benefits more by having plenty of room than Beans, and if planted as above they invariably pod better than those planted in rows close together. For exhibition none can come up to Webb's Mammoth. I have tried several of the much-belauded ones, but found they all failed to fill so well as Webb's. The pods of many were equally long and much wider, but the finger and thumb soon found out that beans were wanting to make the pods satisfactory. John Harrison I have not tried, but shall do so this year.—H. S. EASTY.

EARLY CHRYSANTHEMUMS.

IN fulfilment of a promise to the readers of the *Journal of Horticulture* I will now say a few words on the semi-early or October-flowering Chrysanthemums I have been able to grow as new to me this season. The additions are good and useful—that is, as open garden sorts. My notes are chiefly intended for growers who have no glass houses, and who do not show plants or flowers, but who wish to have them under circumstances for which many of the ordinary sorts are quite unfit.

Mr. John Laing (not James Laing, which is quite different).—Perhaps this Japanese variety is the most important of the novelties. It is rather a slender-growing plant, but is free and vigorous, with dark rather spare foliage. It is about 3 feet 6 inches in height, and bears attractively coloured flowers, which are produced in succession, so that they can all expand without disbudding. They are reddish crimson in colour, very showy in appearance, and of fine quality. The florets generally stand out straight or slightly reflex, forming flowers between 3 and 4 inches across. I believe this will prove to be an early sort upon a second season's experience, but I did not receive my plants soon enough to test its full merits; and as it was the first trial of the plant in this climate, probably it may behave differently this season. It is not a very showy plant, and requires a stick or support.

Mons. Alexandre Dufour.—This is a very fine, free, and distinct semi-early Japanese sort, and has obtained a first-class certificate of the Royal Horticultural Society. It is a robust grower, rising to a height of about 30 inches, and has a stiff woody stem. The support of a stick is necessary, as the large number of flowers renders it heavy at the top. It is very good for the open garden, as it endures storms well. The colour is a red shade of violet, very bright indeed. Its flowers are about 3 inches across, and when the florets do not incurve they present a face of very pure and charming colour. When grown strongly very few of the blooms

have the florets incurved, but when they do the grey lower surface gives the blooms quite a different aspect.

Isidore Féral.—Another new and very beautiful Japanese variety, coming well in October. The colour is a very bright pink, almost cerise. The flowers are from 3 to 4 inches across, and the plant grows 3 feet 6 inches high. It is of slender habit, and requires the support of a stick.

Mons. H. Jacotot.—A reflexed flower of a velvety crimson colour. It is a good grower, and fit for the open garden. It grows from 2 feet 6 inches to 3 feet high. The stems are stout, but want support. The flowers are about 3 inches across, but as the buds come very close together it would be all the better for having some taken out, though if left alone it forms a very handsome truss of flowers. It stands rough weather wonderfully well.

La Désirée.—A new white Pompon. It grows from 4 feet to 4 feet 6 inches high, and although the stems are stout they require sticks. It bears neat little nearly globular flowers in clusters, each flower being 1½ inch across. It is very good and robust.

Mlle. Darnaud.—This is a new and very good semi-early Pompon, suitable for the open garden, being robust and dwarf. It ranges from 2 to 3 feet high, and bears flowers about 1 inch in diameter. They come in clusters on the ends of the branches. The colour is deep pink.

Héloïse Mielez.—Quite a different variety from the one sent to me from France last season, which was so poor that I threw it away. The one under consideration is a useful little Pompon, growing about 20 inches high, and bearing very white reflexed flowers about 1½ inch in diameter, rather flat in form. I believe this will become a favourite both for cut flowers and as a small pot plant, as well as for general decorative purposes. Both the plant and the flowers are stout and thick.

Mlle. Lacroix.—This may fairly be included amongst the semi-early sorts. It is a Japanese variety, and described by the French as having "flowers of a rosy white, passing to white." The flowers I have seen were pure white, but perhaps that is due to our climate. It is a real beauty, and will probably prove a second Madame Desgrange in popularity only for later flowering. It grows about 3 feet high, with stout wood, and is suited for open beds as well as for culture under glass. It is also said to be excellent for exhibition, and for all purposes of decoration is really superb. Its flowers are extremely elegant and refined, and no doubt will find favour with the ladies. The blooms are not very large, but consist of narrow, slightly twisted, stiff florets, standing out so as to form a ball. The centre fills up very well. I think that all who grow it will feel delighted and satisfied.—W. PIERCY, *West Road, Forest Hill, London, S.E.*

NOTES ON GRAPES.

DUKE OF BUCCLEUCH GRAPE.—In response to the suggestion of your correspondent who signs himself "Thinker," I have to say regarding the growth of this Grape that I have grown it in the driest of districts and soils and in the wettest, in light sandy soils and on heavy wet ones, and have always found it among the most robust-growing of Vines. Just now I have a small houseful of it in the same range with a house of Black Hamburgs. This range is sunk into the ground 3 feet below the general level. The border to it was made hurriedly in 1868, and Vines planted in it which were only intended to be cropped for two or three years, but they are still bearing well, and the Dukes make much stronger wood than the Hamburgs, and they are not by any means weakly.

I have grown it on its own roots, on Hamburg and Muscat roots, and under each condition found it the most vigorous of Vines. At the Tweed Vineyard this Grape is on its own roots, and probably they are the most rank or gross-growing Vines in the vineyard.

I had it once forming one of three limbs of a Vine, the other two being Hamburgs, and the Duke was by far the stronger.

While speaking of Vines it sounds rather strange to an old stager to see it stated that, "generally speaking, Black Hamburgs are out of season after September." If this be correct all I can say is the more's the pity.

We have a large house of Black Hamburgs here that as a rule we begin to use about the end of September, and it keeps on in good condition till December, and no other black Grape has been tolerated at table while it lasted. Moreover, I have seen Black Hamburgs in good order at the end of January.

It is much to be feared the culture of large coarse sorts have of late years pushed the grand old Black Hamburgs out of the place which its superior quality assigns it. From May till Christmas at any rate I should say no other black Grape can compete with it for quality. What says "Thinker?"—D. THOMSON, *Drumlanrig.*

MADRESFIELD COURT GRAPE.—Your correspondent, "Thinker" (see page 188), honours me by stating that he should like to hear what I have to say upon the above Grape. Doubtless Madresfield Court when first sent out was recommended as a late-keeping variety, and to some extent has fallen short of that expectation. I am not in a position to say that its keeping qualities were ever properly tested before being put into the hands of cultivators, but this in no way affects the fact of its being a first-class Grape and well worthy of the certificate awarded to it by the Royal Horticultural Society. In my opinion Madresfield Court is the finest black Grape in cultivation, not even excepting the good old Black Hamburg. In proof of this it has for the past three years been awarded first prizes for the finest flavoured black Grapes at the Royal Caledonian Horticultural Society's Autumn Fruit Show, including the Great International; this,

too, in competition with several samples of Muscat Hamburg. These Edinburgh autumn exhibitions are acknowledged to be the greatest Grape shows in the kingdom, therefore a sure criterion as to the good or bad qualities of any Grape.

It has another good point—namely, in being a first-class traveller, and keeps well after being packed and jostled on a long journey. This I have been able to amply prove in a most satisfactory manner. Part of my duties during the autumn are to supply Grapes for a large shooting party in the far north of Scotland. These are taken a 450 miles railway journey, then carted fifteen miles over a rough Highland road. For this purpose I have tried several varieties, but by far the greatest praise has been bestowed on Madresfield Court, while on the other hand Duke of Buccleuch, Muscat of Alexandria, and Black Hamburg have turned out anything but satisfactory. I have no hesitation in saying that when Madresfield Court, is better known and its cultural requirements better understood it will become as it deserves to be, one of the most popular Grapes in cultivation. Someone will say, "What about its berries splitting?" Well, if they do sometimes split that is not entirely the fault of the Grape. We grow about eighty bunches, and I believe I am well within the mark when I state that we have not occasion to cut out more than twenty berries annually. With us it keeps plump and sound three months after it is ripe. I hope next week to say a few words on the Duke of Buccleuch Grape.—JAMES MCINDOE.

GRAPE GROS MAROC.—If Mr. McIndoe's opinion of the merits of this Grape is to be estimated by his opinion of the Black Hamburg, which he must know much better, the less regard your readers pay to his dictum the better I should say. Speaking of the Black Hamburg, he says that "generally speaking it is out of season after September." Generally speaking, I know of no Grape growers who regard the Black Hamburg as "out of season" while it can be had, and that is till the end of November or Christmas; at least, wherever a long supply of Grapes is expected. Our latest Hamburgs are never ripe until October, and during the whole of that month and later we have them fine, and so have my neighbours. I have often had it at Christmas. I would ask Mr. McIndoe what other black Grape he depends on after September if his Black Hamburgs are by that time done?—NON-BELIEVER.

TRENCHING GROUND.

IN reviewing and replying to the various points made by different contributors to this discussion I shall first notice the remarks by "W. P. R." on page 126. It may be gratifying to a few of my well-wishing friends to learn from him that I have not gone far astray, nor attempted to cause a revolution in the treatment of our garden soils. What I wished to avoid from the first was the expression of extreme views, but as it often happens a middle course is calculated to mislead. There are exceptions to every rule, and it is not always easy to decide when trenching should be resorted to and when avoided. My aim was to call attention to the fact that this laborious and expensive operation may easily prove a source of injury rather than profit. In the case of "W. P. R." I unhesitatingly assert that there was little or no need to resort to trenching in order to restore the garden to its proper fertility. In all probability for a long time prior to his taking charge of the garden it had been heavily manured, only half dug, and lightly cropped. The surface had thus become a mass of inert or poisonous soil, and in which vegetables generally would not grow satisfactorily. Clubbing doubtless did occur with his Cabbages, &c., but according to my experience under an exactly similar state of affairs it was not the true "clubbing" brought about by insects, but only a refusal or inability on the part of the young plants to root into the poisoned soil. The cheapest, and, I believe, the best remedy would have been digging to the full depth of the blades of straight new spades, this being done early in the winter, and roughly, followed in the spring by a liberal dressing of lime, road trimmings, mortar rubbish, burnt clay, or other somewhat similar materials, all well forked into the surface. This would, and did in my case, prove all the corrective needed, and as I am given to close cropping coupled with liberal treatment, no further difficulty was experienced in the matter.

The ground I recently trenched for dwarf Roses had been occupied with Roses for many years, and is situated in the highest and warmest position in the garden. Even in this case I do not feel certain we acted wisely, as at the present time the ground is a quagmire. Luckily we anticipated this by planting the Roses before much rain fell. One of my objections to trenching of any kind is the fact that in the case of heavy clayey soils the extra depth gained is apt to become saturated, and being impervious to all warmth more injurious than advantageous to the deep-running roots, and, further, that they are also the first to bind and crack badly in hot weather.

All my opponents seem unanimous as to the desirability of providing a deep root run for vegetables generally, and both "W. P. R." and Mr. Temple glory in their gross growth. Speaking of Carrots, Parsnips, and Onions sown on trenched ground, Mr. Temple states that "the great height of the tops and the immense size of clean roots showed that the right thing had been done." It is a pity he did not add Beet, as it is just as good a practice to grow these near the size of Mangolds as the kinds named to an "immense size." Where Mr. Temple grows one immense root on trenched ground, I will undertake to grow three roots on ground not dug at all for these crops, and yet these shall be preferred by any experienced cook. What next? will be asked. Simply this, I assert that even ordinary digging is practised more often than is really needful, and I hope later on to be able to substantiate the assertion.

No vegetables object to a root run of 2 feet, neither does the fact of their being known to run down 4 feet or more prove they are benefited thereby. They may thus be enabled to draw moisture when perhaps other crops rooting near the surface are suffering by want of it, but all seem to forget that the great complaint in this country is generally about the dullness and coldness of our summers. All admit that warmth at the roots is absolutely necessary in the production of profitable crops, and yet we prepare the ground in such a manner as to entice the roots well below the depth ever materially affected by sunshine and warmth. Where is the soundness of this practice?

Mr. Temple even goes the length of trenching three spades deep. Did he ever calculate the cost of this experiment? He also gives the names of several notable gardeners who strongly advocate or advocated deep trenching, and the number might be added to at pleasure. But if it should eventually be found that all these great men are radically wrong, would it be the first time that a number of clever men have been proved to have gone too far in their action? I think not. Both Mr. W. Thomson and Mr. D. Thomson are men respected by gardeners throughout Great Britain, and I yield to no one in my admiration for their good qualities, but still prefer to think for myself. Supposing Mr. Thomson went in for market gardening on a large scale, would he adopt wholesale trenching, including the burying trimmings of turf, decayed garden refuse, &c.? I prefer as my guides in the matter of trenching numerous market growers near London, unknown to fame, but who are remarkably practical, and have contrived to amass good fortunes in the business. "A Thinker" hints that those among them who practise deep trenching (these being principally on the south and west side of London) are the most thriving, and can afford to pay heavier rents. I have had fair opportunities of contrasting the practices of the growers about Fulham and neighbourhood, and which I presume were alluded to, with the methods adopted by the Essex farmers and gardeners, among whom I lived four years, and I am therefore in a position to offer an opinion in the matter. It is not because the market growers at the west side of the metropolis secure so much the heaviest crops that they can afford to pay heavy rents, but it is simply because their nearness to the markets enables them to run their produce in cheaply, and to load back with very superior manure, which they obtain at a cheap rate—almost for the carriage, in fact. In Essex, where immense quantities of vegetables are grown for the markets, trenching is very rarely resorted to, and but little ordinary digging done, the plough being the principal implement in use. On some of the large farms steam ploughs and deep culture is resorted to, but I could point to two holders of these large farms that blame the steam ploughs for the state of bankruptcy in which they now are. On horse-ploughed land Potatoes crop not unfrequently grown at the rate of 13 to 14 tons per acre, and other crops are equally as heavy and good. The ground is generally well manured and in a very firm state, and as a consequence the top growth is sturdy and hardy, and the produce all that could be wished for by the farmers, if not by private gardeners. The former, unfortunately for themselves, grow many more vegetables than they can sell at a fair price, this state of affairs, strange to say, being partly owing to trade depression in the midlands and northern counties, to which at one time great quantities of green vegetables were sent. Only recently I availed myself of an opportunity to walk through a large market garden or farm rented by a friend in Essex, and finer crops of Coleworts, Brussels Sprouts, Savoys, Broccoli, and Kales could not well be found.

Has it never struck private gardeners as being rather odd that a fair supply of Broccoli can be seen in the markets, when, perhaps, theirs are either destroyed by frosts or refuse to form heads? It is severe frosty weather that market growers long for, well knowing that their sturdy crops will withstand an ordinarily severe winter, and realise high prices owing to the scarcity in private gardens. I have known Broccoli to realise £75 per acre, Brussels Sprouts £50 to £60 per acre, and correspondingly high sums for other green crops. Besides being hardier, they are also earlier on firm ground, and, altogether, I think I have made out a case against the admirers of a deep root run.

But what about the fruit trees? Mr. Temple and "W. P. R." omit all mention of this, and I suppose we must take it for granted that these, too, require a deep root run; at any rate, "A Thinker" is confident that they do, while "J. L. B." remains neutral, and Mr. S. Chinery agrees that they should not root deeply, but trenches for Strawberry crops, considering this a good preparation for other vegetable crops later on. It may be so in his case, but on most heavy soils it would be the worst preparation imaginable, as Strawberry crops usually leave the ground in a much-trampled unkindly state, from which they do not readily recover. Market growers, as a rule, neither trench for Strawberries nor fruit trees, not only because it is too expensive, but also because on all good fruit-growing soils the tree makes a more profitable progress on untrenched ground. On the farm in Essex above alluded to, the progress of the thousands of fruit trees and bushes planted about four years ago and since is really astonishing, and yet they were planted on ploughed land only. The standard trees on Apples, Pears, Plums, and Cherries, many of them now about seven years old, are in splendid bearing order, some of the sorts having heads fully 7 feet through, and the majority yield good crops of fruit, which, if thinning had been resorted to, would have been fit for anything. Before they were planted I should have given but little for them, so scrubby did they appear. Adjoining these new plantations, forming part of one large field in fact, are about seven acres of fruit trees, which were planted about fourteen years ago. In this case the ground was trenched, but this great outlay, and the unsatisfactory progress of the trees, was too much for the proprietor, and he became bankrupt. Many of the trees have since died, and I should say the re-

mainder will soon be surpassed by the much younger trees planted on ploughed ground. The latter, when I firmly swayed them to and fro, disturbed for a good distance the ground around them, and afforded unmistakable proof they were rooted near the surface.

The progress of all kinds of trees planted on trenched ground may be more rapid, but what is the nature of the growth? Is it hardy, short-jointed, or fruitful, as the case may be, or is it not rather the reverse of this—not calculated to form durable timber, or requiring judicious treatment and root-pruning to render it fruitful? It is not the rapidly grown timber that realises good prices, nor the rapidly grown Conifers, evergreens, and shrubs that withstand a severe frost. It may be argued that our forest trees are naturally deep-rooting, the tap root striking straight downwards. It is quite certain that many of our noble Oaks and other trees send down one or more strong roots, and it is equally certain that these are the first to decay, this decay, unless anticipated by felling, being gradually communicated to the heart of the tree. Surface-rooting trees form the hardiest and most fruitful growth, and with few exceptions the same may be said of vegetables. Expend a little more labour on and add the various materials, such as Mr. Temple and others find it advisable to use on trenched land, to the surface, and there will be less cause to complain of the productiveness of much untrenched land.

Since the foregoing was written, "Visitor" has contributed a remarkably able and lucid paper, which will have been fully appreciated by all who are interested in this subject. He will perhaps be surprised to learn that I consider he has advanced several opinions which strongly support some of my arguments, but he certainly does, as I shall attempt to prove. As he courteously pointed out, some of my opening sentences were worded in such a manner as to confuse my meaning, and for this I must apologise. In the instance he quoted I meant to imply that in some cases trenching may perhaps be advantageously resorted to, but there are more instances where it would be better let alone. I ask if trenching is always judicious, and plainly replied, Certainly not. With this my friendly critic fully agrees, as witness the following:—"Stiff marly subsoils require even more care in trenching than clays, while those composed of chalk and gravel are better left undisturbed." Subsoils composed of clay must be judiciously trenched, marls very carefully so, and chalk and gravel not at all. No other opponent has admitted half so much as this, and this should convince my readers that I put no idle question, or questioned the wisdom of trenching unadvisedly.

I am aware authorities and figures are against me in this matter of deep culture, but facts, as I try to present them, are stubborn things, and with me have more weight than the theories propounded by eminent experts. If I with 4 acres of garden ground am able, without resorting to trenching, to more than supply one and very frequently two fairly large establishments with all kinds of vegetables, including Potatoes, as well as abundance of small fruit and Apples and Pears all the year round, surely I am justified in doubting the wisdom of or the necessity for deep culture. The position and nature of the soil further prevents anything like a systematic rotation of crops, and as a consequence everything depends upon the surface culture. No complaint is ever heard of the smallness of the various vegetables. On the contrary, the cock would be better pleased if all the roots, as well as Broccoli, Cauliflowers, and Brussels Sprouts, were on the whole much smaller than those sent to him. Our garden costs comparatively little in manual labour, and no manure is wasted—that is to say, buried too deeply.

"Visitor" admits "there is no doubt it is near the surface that the majority of the roots of the plants we cultivate thrive best," but spoils the admission by the very doubtful assertion that it is impossible to keep them rooting near the surface by shallow cultivation. Farther on he hints that roots will form any quantity of roots at any depth providing some sort of resistance is offered to them. Exactly so, that is what I also contend. A great depth of loose soil offers no resistance to the downward tendency of the roots, but the case is very different with the freely manured and firm ordinarily dug or ploughed ground. Given the required solidity and plenty of manure close at hand, and both the top and bottom growth may easily be satisfactory to all but those who measure results by the vigour of the top growth and the great size of the produce.

"Visitor" evidently is a great believer in the value of a deep root run for fruit trees, but has scarcely well weighed his remarks upon this portion of the subject. He has advanced too much, in fact. He remarks that "In thoroughly drained, judiciously trenched, well cultivated soil, the roots of vegetables cannot and will not grow too deeply, nor will those of fruit trees. It is not the depth they penetrate that does the mischief, but it is the wrong kind of muck and half-hearted cultivation that is at fault." Then comes the, to me, the very pleasing assertion that for trenching to be profitable it must be "judiciously and gradually performed." Did it occur to him that the "gradual improvement of the subsoil would in the case, say, of a quarter planted with fruit trees, be rather a difficult undertaking, or does he recommend that land be trenched and retrenched for several seasons prior to planting with fruit trees? What would our market growers and the designers of new gardens say to that? He plainly shows one liberal admixture of vegetable matter to the subsoil will not materially affect its character either for good or ill. On the contrary, he well knows that in many cases it took ages to render the surface soil fertile by a natural process, and man and Nature combined will not quickly change the character of the subsoil. In our case were we to bring a thin layer of the subsoil to the surface it would quickly assume the consistency of birdlime, and instead of proving beneficial when mixed with the surface soil, would undoubtedly act most prejudicially. With regard to the suspension of moisture by newly trenched ground, about which I complained, instead of this being an "index of good rather than ill," I

am more inclined to think too dangerously near to saturation. This, in fact, is what it amounts to in our case, and our trenched ground is also very cold in consequence. Here, at any rate, a deep root-action is the cause of the ruin of every large Apple tree in the garden.

Fibres being formed at a great depth when they came into contact with a brick wall, or, as in the case of the Vine roots, with a quantity of rubble or drainage, is a proof that aëration as well as of obstruction has much to do with a healthy root-action. The Vine roots were found in great quantities at the surface and at the base—the latter being well drained and therefore aërated; but what about the middle of the border? If it was also full of roots, deep borders and deep cultivation has more to recommend it than "Viticator" has yet succeeded in proving. For my part, I hope we shall not hear any more in favour of 5 feet deep Vine borders, seeing that those half that depth, if properly formed, are quite expensive enough, and are also quite deep enough. It would be rather odd if after all I am not so much astray as our "Viticator" friend.—W. IGGULDEN.

LORD NAPIER NECTARINE.

THIS, perhaps the handsomest of the many fine Nectarines raised by the late Mr. Rivers, has been somewhat roughly handled by Mr. J. Muir and others. I can quite believe that those who condemn it speak precisely as they have found it. In my charge we have a tree in our earliest Peach house, the fruit of which is ripe in May. Here both in size, colour, and flavour Lord Napier is all that can be desired, in short is "guid as it's bonnie." In another Peach house, where the fruit is ripe in July and August, during the cold, wet, sunless summers of 1881, 1882, and 1883, Lord Napier was quite bitter and insipid, while Pitmaston Orange and Humboldt, growing side by side, were both rich and luscious. During the same sunless seasons Elruge and Victoria, in the late house, were only fit to send with Peaches to make jam, and for this purpose the housekeeper speaks highly of them, as also of Lord Napier. Last summer and autumn all the Nectarines grown here were alike good in flavour, Lord Napier included.—J. McINDOE.

TUBEROUS BEGONIAS.

THE time has arrived for again starting Tuberos Begonias into growth, and as their culture is not so generally known as it ought to be a few plain practical remarks on this particular point might prove of service. The season of rest with the Begonia is practically at an end, and those tubers that have succumbed to injudicious management by either receiving too much water or not being sufficiently moist will be easily detected now. Though the Begonia can be wintered under conditions similar to the Gloxinia, the former is injured more by extreme dryness than the latter; not that the Begonia prefers moisture when at rest, for such is not the case, as it is natural for them to lose most of their roots annually. A large per-centage of annual losses may, however, readily be traced to insufficient care when drying them, which, in many instances is done far too rapidly; the more gradual the drying process the greater the chances of retaining the tubers sound and plump during their season of rest.

Presuming the pots to still occupy the pots in which they flowered last summer, the first thing to be done is to clean off the surface soil so as to bare the tuber, after which carefully remove the soil so as to form a gradual slope from the apex of the tuber to the inside of the pot, leaving the tuber thus partially exposed in the centre. This is of great importance until growth has fairly commenced, when the danger is considerably lessened, and water must be given somewhat sparingly. For the first week or two it should be given round the side of the pot, and on no account be allowed to reach the summit of the tuber. Too much importance cannot be attached to this, for at the summit of the tuber, and in the position occupied by the main flowering stem of last year, will be found a large hollow crown or receptacle; if the water gains a lodgment there and is not detected failure must instantly ensue. The same difficulty is experienced when drying them just as the stems are decaying; the water finds its way down the stems and settles in the top, doing the mischief without being discovered.

In the event of the tubers having been shaken out of soil in the autumn and stored away they should be examined at once, and ascertain if they are sound and plump. If so shallow boxes will be found serviceable for starting them in. In this case either of the following ways or both may be adopted—*i.e.*, place them on cocoa-nut fibre or soil, and bury one-half their depth, or employing similar material place the tubers upside down, and just cover with soil. By adopting the last-named process there is no fear of water settling in the hollow crown at the top, and, what is more, the summit of the tuber is kept more uniformly moist than where they are partially exposed. A more uniform moisture might be maintained were the tubers kept dark till they began to start, when they may by degrees be gradually inured to full light. This is more readily accomplished where there are only a few dozens; where they are in large numbers special attention will be requisite, and special quarters also for them. Those placed in boxes with the crown downwards will need looking at in about a fortnight, when the majority will be found to be breaking freely. These may then be reversed, for new roots soon will be emitted, potting them according to their requirements. Exercise forethought at all times in the management at starting, and especially so in watering, for by injudicious watering at this season many hundreds are annually lost. A temperature of 50° to 55° at night, with a rise to 65° by

day, will suit them well, and if accompanied by slight bottom heat so much the better, keeping the atmosphere moist.—J.

NEW VEGETABLES.

"ARE our vegetables improving?" is asked by "A Kitchen Gardener" in the Journal of February 19th. They ought, if we are to judge by the enormous increase of varieties which Smith, Brown, Jones, or Robinson, or some other eminent or not eminent seedsman, is constantly putting out as his so-and-so, at a good figure for himself if not for the purchaser. I freely admit that some of the newer vegetables of the last twenty years maintain their ground, but there are still some very fine old sorts of Peas hard to beat, such as Ne Plus Ultra, Fairbeard's Champion of England, some of good old Dr. Maclean's varieties, notably Wonderful, Prince of Wales, Dr. Maclean, Advancer, and others. Such sorts are everybody's Peas, as they are cheap and within the reach of the poorest, and hold their ground after a long term of servitude. What I should greatly like to see done is a trial of everybody's new varieties before they are sent out, under the auspices of some of our good old wholesale seedsmen, who know as much about vegetables as most folks, and I think we should then be freed from some disappointment attending new high-priced vegetables, many of which do not long hold a front place in kitchen gardens generally.—D. W.

DECORATIVE PALMS.

THESE useful and accommodating plants now occupy a very important position in all gardens where plant-decoration is well carried out. The ease with which they can be grown, and the length of time they will keep fresh when used for room-decoration if properly attended to, has rendered them especial favourites with amateurs as well as professional gardeners. The demand for well-grown Palms of various sizes is enormous at the London nurseries as the season commences. Each family arriving in town requires a stock of Palms and other plants for furnishing windows and dinner tables, and there is now such a number of these plants to select from, of graceful form, compact habit, or bold outline.

Some diversity of opinion exists among different cultivators as to whether peat or loam should form the chief part of the compost used to grow them in. My own experience is that they are not so particular in this respect as many would have us believe, provided the plants are firmly potted in well-drained pots, and receive frequent applications of manure as soon as the roots are plentiful. The relative quantities of loam and peat to be used should be determined by the quality. In some places good turfy loam can be obtained in which almost anything can be grown, with but little addition required, while in other parts the only loam that can be procured is of such a nature that few plants take to it readily. In such cases it is better to use a greater proportion of peat, but in the majority of instances equal parts of loam and peat with the addition of a little charcoal and sharp sand will be found to suit all the strong-growing kinds, but many of the weaker-growing ones will thrive better in two parts peat to one of loam. Nearly all the fine young Palms that each year arrive in this country from the Continent are potted entirely in leaf soil; but after their arrival the greater portion of them are potted in soil of the above description, because leaf soil is not of a lasting nature and is apt to become sour.

In order to secure that rich deep green tint which is seen in the leaves of well-grown Palms, and which adds so much to their attractiveness, they must be constantly supplied with liquid manure or with some artificial stimulant spread over the surface of the soil. Clay's Fertiliser and Peruvian guano in equal quantities mixed together and applied once a month at the rate of a teaspoonful to a 7-inch pot, and half that quantity to a 5-inch pot, is one of the very best stimulants. Soot water should also be used occasionally, and it is an excellent practice to have a bag containing a little soot kept constantly in the tank from which the water is taken to syringe the plants. This is a great assistant in keeping all plants healthy and free from insects. During the summer months when the weather is bright the plants should be syringed twice daily, but in the dull winter months they will only require it occasionally when there happens to be a little sunshine, or when exceptionally hard firing has to be resorted to, unless the plants are standing in a very dry position near the hot-water pipes; then it will be necessary to syringe them twice daily to keep them free from insects, and at all times the house must be kept thoroughly well damped three or four times a day, taking care that the walls are well moistened around the pipes. There are no plants that pay for being kept clean better than Palms, not only in regard to their appearance, but also in the effect it has on their growth. Keep them well sponged as soon as any sediment is noticed on the leaves, and they will grow much more rapidly, other conditions being equal, than those not so treated. All the stove species will thrive in a temperature ranging between 55° and 70° in winter, and 65° to 80° in summer.

I subjoin a list of those I know to be most useful, and amongst

them will be found the majority of those kinds that are grown extensively in the London nurseries. Those marked with an asterisk are suitable for dinner-table decoration:—*Areca Baueri*, *crinita*, **Herbstii*, **lutescens*, **lutea*, *rubra*, *sapida*, and *Verschaffeltii*; *Brahea filamentosa*, *Chamædorea elegans* and *glaucophylla*. The latter is very distinct and beautiful, and is particularly suitable for arranging among groups of plants, as the stems grow tall and straight, and are crowned with extremely graceful fronds. *Chamærops excelsa* and *humilis*, *Cocos plumosa* and *Weddelliana*, **Euterpe edulis*, **Geonoma gracilis* and **intermedia*.

**Kentia australis*, *Belmoreana*, **Fosteriana*, and *Canterburyana*. These *Kentias* are in greater demand than almost any other Palms on account of their great beauty and enduring properties. *K. Belmoreana* and *K. australis* are the most graceful, *K. Fosteriana* has the boldest outline, and *Canterburyana* is the most compact in habit. *Latania borbonica* is also useful.

Phoenix dactylifera, *reclinata*, and **rupicola*. The latter is a splendid decorative Palm, especially when changing from the broad leaves of its young state to the evenly divided fronds which older plants produce. Its appearance is then unique. *Rhapis flabelliformis* and *humilis*. Both of these are very lasting and distinct from most other Palms. **Seaforthia elegans*, *Thrinax elegans*. The fronds of this Palm are fan-shaped, similar to *Latania borbonica*, but much more elegant; it makes a fine specimen plant.—H. DUNKIN.

THE INFLUENCE OF SOIL ON POTATOES.

POTATO-PLANTING time will soon be here, and the question, "What sorts are you going to grow?" will be repeatedly asked, and advice will often be gratuitously given. Now, I venture to give a word of advice—simple, but I think valuable: "Grow for the main crop that sort or those sorts that you have proved do well in your soil and situation." It is marvellous the difference between a Potato from a garden that suits it and one from a garden that does not suit it. My garden is high, the soil is light loam on sand, and below is red sandstone rock. Almost all the Potatoes I have tried grow "soapy"; in fact, I have only found one that is really "first-rate," and that is Sutton's Reading Abbey. This I have grown for some years, and it has been good every season, always a fair crop with very little disease, and it is always dry and of excellent flavour. I sent in 1883 a small quantity of seed tubers to a friend who has a farm in Shropshire, known as a good farm for Potatoes, and he sent me in exchange some Reading Hero. On his land the Abbey was worthless, and on my land the Hero was the same, while the Hero with him is as good as the Abbey is with me. I could mention many other varieties that I have tried here and found worthless, but when sent me from other places have proved good. I, therefore, keep to my Abbeyes, and I advise your readers to continue to grow those sorts that they have proved to do well with them. I consider the Reading Abbey to be one of the best Potatoes.—L. J. W.

BRANTINGHAM THORPE.

ABOUT nine miles from the busy seaport of Hull, and two miles from Brough station, is the charming country residence of Christopher Sykes, Esq., M.P. Situated on a hill with the Yorkshire wolds behind and magnificent scenery in front, very few mansions can surpass either the beauty or extent of the views of the surrounding country.

The mansion (its walls now nearly covered with Ivy and Virginian Creeper) was built of stone in 1671, but many alterations and improvements have been carried out by the present proprietor. About nine years ago the flower garden was transferred from the back of the house to newly formed front terraces designed and tastefully laid out by Mr. Kingston. The beds are now filled with plants for spring blooming, to be succeeded by carpeting in the summer. From these terraces looking south a grand view is obtained of the mouth of the Humber with the Ouse and Trent uniting in the distance, the Lincolnshire hills beyond, and the towers of Lincoln Cathedral are visible on a clear day. The west presents a beautiful landscape, and far away may be seen York Minster.

The park or foreground of this view contains many handsome trees. Conspicuous are the specimens of *Wellingtonia gigantea* planted by members of the Royal Family, the two first by their Royal Highnesses the Prince and Princess of Wales in 1869 on the occasion of their visit when opening the Albert Dock in Hull; several times since his Royal Highness has planted trees when accepting Mr. Sykes' hospitality at this pleasant retreat for the purpose of attending the Doncaster races. The Crown Prince of Hanover planted a *Wellingtonia* to commemorate his visit to Brantingham Thorpe in 1877, and others have since been planted. The conservatory is an old-fashioned but substantial building in three divisions, each with a dome-shaped roof with stages in the centre, one shelf above another. On the lower shelves softwooded flowering plants are arranged with a number of Heaths above in the first division, Azaleas and Camellias in the next, and the other contains some healthy specimens of good old and rare hardwooded plants, together with a grand batch of *Nothofagus* and *Cheilanthes*, which have occupied this house for a number of years.

Leaving the lawn surrounded with choice Coniferæ we come to a border extending the full length of the kitchen garden wall devoted to herbaceous plants—a very interesting collection arranged in their respective families. Near this are some low span-roofed houses

used for storing bedding plants, growing Cucumbers, choice named double Primulas, Euphorbias, Eucharises, Gardenias, Bouvarlias, and other plants to produce blooms for bouquets and table decoration. In the Orchid house (a half span-roofed structure in three compartments) the stages are as near the glass as will conveniently allow a person to attend to the requirements of the plants. Cocoa-nut matting is laid on all the stages, and the result is most satisfactory. It is always kept moist and does not decay in this condition. Slugs will not crawl over the rough surface. The first part is full of *Odontoglossum Alexandræ*, *Masdevallias*, &c. *Dendrobium Jamesianum* is making strong growth on a shelf close to the glass in a temperature of 45°. The walls are covered with *Ficus repens*, and the Orchids have made vigorous growth in the moist atmosphere. The intermediate house is very gay with *Calanthes*. We noticed among others the following in bloom on the day of my visit, January 30th:—*Calanthe vestita lutea* with spikes 3½ feet in length; *C. Veitchii* (the best coloured form we have seen) with graceful spikes, some carrying forty blooms each; *Lycaste Skinneri*, large and fine; *Cypripedium insigne Maulei*, thirteen blooms; *Cattleya Walkeriana*, *C. Trianae*, *C. Warscewiczii delicata*, *Masdevallia ignea*, *M. tovarensis*, *M. Veitchii*, *Odontoglossum Alexandræ*, *O. gloriosum*, *O. pulchellum majus*, *O. Rossi majus*, *Oncidium Forbesi*, *Zygopetalum Mackayi*. The spikes had been cut from a fine plant of *Z. rostratum*. Amongst there were arranged a number of dwarf *Poinsettia pulcherrima* with bracts measuring 18 inches across. There are also some large specimen Orchids; *Arpophyllum giganteum* 3 feet through, *Epidendrum fragrans*, *Cœlogyne cristata*, *Lælia superbiens*, a choice selection of *Cattleyas*, &c.; and growing freely in this house we noticed a number of *Odontoglossum Phalænopsis*, *O. Roezlii*, *O. vexillarium* and its varieties *Cobbianum* and *rubellum*, also a fine piece of *Acineta sulcata*, which has flowered there.

The East Indian house contains some good *Aerides*, *Saccolabiums*, *Vandas*, &c., mostly grown in pots; *Dendrobium Dalbousianum* with growths 5 feet high, and last season it had twelve spikes of its showy flowers; *D. moschatum* with thirty growths; *D. Wardianum Lowii* showing well for bloom; the pretty delicate white *D. album* in bloom; and *Phaius grandifolius*, making a number of enormous spikes. *Adiantum farleyense* and many choice Ferns are represented; *Ouvirandra fenestralis* is making a good specimen in a large wooden vessel; *Pinches' Acme Labels* are used for the Orchids; they are very neat and imperishable. Credit is due to Mr. Arthur Greaves, who had been foreman three years, and having served previously under Mr. Swan at Fallowfield it is not likely that a man with such love for his work will be long seeking another appointment. The Orchids in bloom on March 3rd were *Cœlogynes cristata* and *ocellata*, *Cypripedium insigne*, *venustum*, and *ciliolare*, *Cattleyas Trianae*, *Percivalliana*, and *Warscewiczii*, *Cymbidium eburneum*, *Dendrobiums nobile*, *Pierardii*, *crassinode*, *Barberianum*, and *Wardianum*, *Masdevallia tovarensis*, *Odontoglossum Alexandræ*, *pulchellum major*, *Madrense*, and *Rossi major*, *Oncidium Forbesii*, *Phalænopses grandiflora* and *Schilleriana*, *Zygopetalum Mackayi*, and *Phaius grandiflorus*.

The long range of vineries, Peach, Fig, and Rose houses, all bear testimony of judicious management. The latest vinery was full of *Chrysanthemums* in bloom with clean bright foliage, the varieties being chiefly *Princess Teck* and *William Howe*. Everything about the garden is neat and in order. Much more might be said of this garden, but I had only time to notice a few of the leading features. My thanks are due to Mr. Kingston for conducting me round and his usual kindness. He has faithfully held his present situation for the last forty-three years, and he is ever anxious to assist his younger brethren and to give instruction and advice to those under him.—G. W. CUMMINS, *Hackbridge*.



At a general meeting of the ROYAL HORTICULTURAL SOCIETY, held March 10th at South Kensington, Dr. M. T. Masters, F.R.S., in the chair, the following candidates were elected Fellows of the Society:—Samuel Deards, William Glover, Alfred Harley, Rev. G. B. Haydon, Enoch Harvey, William B. Head, James Flood, Robert B. Lemon, Ernest Mathan, E. J. Painter, J. Potts, T. W. Rudston Read, D.L., Charles F. Shaw, Henry Smith, Mrs. Frederick Tantz, Charles Temple, William Vanner, and Alfred Williams.

— THE quinquennial EXHIBITION OF BULBS AT HAARLEM to celebrate the fourth centenary of the General Society of Bulb Culture will be held on the 20th to the 24th inst. in the largest hall at Haarlem. Large exhibitions have previously been held in 1875 and 1880, but this will surpass all those held before, and if it realises the expectations of its promoters it will be the best show of flowering bulbs and tuberous-rooted plants ever held. The schedule has 140 classes, for which 381 medals are offered (gold, gilt, silver, and bronze, some of them with an addition of money value). The aggregate value of the prizes is upwards of £500.

There are eighty-seven medals for Hyacinths, sixty for Tulips, seventeen for Narcissus, and smaller numbers for Crocus, Fritillaria, Galanthus, Leucojum, Scilla, Chionodoxa, Muscari, Erythronium, Anemones, Ranunculus, Liliium, Gladiolus, Iris, Helleborus, Hepatica, Trillium, Convolvularia, Hoteia, Spiræa, Dicentra, Terrestrial Orchids, Pæonia, Amaryllis, Imantophyllum, Eucharis, Orchids, Gesneriaceæ, Begonia, Anthurium, Caladium, Calla, Cyclamen, Tropæolum, Lachenalia, Sparaxis, Phormium, and Yucca, as well as for miscellaneous, rare, or new bulbous and tuberous-rooted plants. A large number of medals is besides offered for table decorations, bouquets, arrangements of flowers, baskets, &c., with flowers or plants, with this peculiar condition, that all the flowers which are put in these arrangements are to be those of bulbous or tuberous-rooted plants. This Show will doubtless be a great attraction to all those who take an interest in bulb-growing. It will give a better idea of the collection of spring bulbs grown in the neighbourhood of Haarlem than any show has done before, and the occasion will afford an excellent opportunity for spending a few days among the many interesting attractions that are to be found in Holland.

— A CORRESPONDENT informs us that a meeting of the LIVERPOOL HORTICULTURAL ASSOCIATION was held on Saturday last, and that it was a most excellent one, the room being crowded to excess. Papers were read by Mr. Andrew Jamieson of Haigh Hall on the "Cultivation of the Peach and Nectarine," and by Mr. J. Smith of Waterdale on the "Cultivation of the Vine." Both papers were thoroughly good, as might be expected from such able gardeners.

— IN about ten days' time there will be a grand display of AMARYLLISES IN MESSRS. J. VEITCH & SONS' CHELSEA NURSERY. 1200 scapes are already showing, and there are many more to come, so that admirers of these showy plants may expect an exhibition even surpassing those of the past four or five years. Scores of seedlings are expanding their flowers for the first time, and many will undoubtedly prove welcome additions to the already long list of novelties that have been raised at Chelsea.

— THE CROYDON HORTICULTURAL SOCIETY'S schedule is now issued, and we learn that the eighteenth summer Show will be held on July 1st in the grounds of Wellesley House, the ninth autumn Show being fixed for November 11th and 12th in the Public Hall, Croydon. Numerous prizes are awarded in the 119 classes at the summer Show, also in the 43 classes at the autumn Show; and the satisfactory condition of the Society is proved by the balance of £89 in their favour as the result of the past season's exhibitions.

— THE SUTTON AMATEUR ROSE SOCIETY'S fourth Exhibition will be held in the Sutton Public Hall, Wednesday, July 8th, of the present year. The financial account of this flourishing and well-managed Society shows a balance in their favour of £60, a substantial indication that it is appreciated in the district. A liberal schedule of twenty-five classes is provided for the present year, the prizes (four in each class) amounting to £90. Several special prizes are also offered, including the ladies' challenge cup, value eight guineas, and the National Rose Society's silver and bronze medals. The analysis of exhibition Roses published in this Journal last year is also included in this schedule, together with suggestions for judging at Rose shows, authorised by the Committee of the National Rose Society.

— THE BRIGHTON AND HOVE CHRYSANTHEMUM SHOW will be held November 10th and 11th of the present year.

— THE HORTICULTURAL PROGRAMME of the CRYSTAL PALACE for the present year is a good one, comprising eight exhibitions. The first will be held March 27th and 28th, and will be devoted to spring flowers; the summer show of plants and flowers will take place on May 22nd and 23rd. The Rose show is fixed for July 4th, the fruit and Dahlia shows for September 4th and 5th; an exhibition of hardy fruit will be held October 7th to 10th, and a Chrysanthemum show November 6th and 7th. As usual, the prizes are very liberal, ranging from £12 to 5s. Under the superintendence of Mr. W. G. Head these exhibitions have assumed considerable importance, and a successful season may be reasonably expected.

— MR. JAMES UDALE, The Gardens, Shirecliffe Hall, Sheffield, sends us some beautiful examples of AZALEA FLOWERS, chiefly of the *A. indica* type, and comprising an excellent selection of varieties. The plants are evidently thoroughly well grown, the foliage and shoots appearing most

vigorously healthy, while the flowers are large and richly coloured. Very notable are Jean Vervaenc, Mrs. Turner, Madame Van Houtte, and Lizzie Tillery, all of which have flowers of a rosy salmon colour, differing in depth of tint with white margins. Of others Apollo and Roi Leopold Alba, both single whites, are very neat and useful, while Comtesse de Flandres (rose pink) and Flambeau (dark red, also single varieties) are attractive. Empereur de Brazil, with double pale salmon flowers and white edges, is very pretty and pleasing. Of several amœna varieties the large Caldwellii and Princess Maude are the most striking.

— THE annual general meeting of the HULL AND EAST RIDING CHRYSANTHEMUM SOCIETY was held in the Royal Station Hotel, Hull, on Friday, 27th ult, when the officers, including Mr. George Bond, Chairman, and Messrs. R. Falconer Jameson and William Hawksworth, Hon. Secs., and Committee were re-elected. It appears that the show last year was visited by about 4000 persons, with the result that there is the handsome surplus of £77 13s. 6d. in hand, besides which there are still a few subscriptions, &c., to collect, and further contributions have been already promised for the ensuing season. This is very satisfactory, and it is confidently expected that the Show will be firmly established as one of the best in the north of England.

— THE GLASGOW and WEST of SCOTLAND HORTICULTURAL SOCIETY will this season hold their spring Show on March 25th, and the autumn Show on September 2nd in St. Andrew's Hall, Glasgow. At the first Show 66 classes are provided, and at the second 149, the prizes ranging from £6 to 2s.

— THE BAWTRY FLORAL AND HORTICULTURAL ASSOCIATION'S SHOW will be held in connection with the Poultry Show on June 18th, 1885, near the Bawtry station. Eighty-two classes are provided by fruit, flowers, vegetables, and honey, three silver cups being offered, including one given by the Viscountess Galway, Serlby Hall, for the best vase of flowers arranged by a lady.

— AS was intimated last week, a very extensive and fine display of PRIMULAS has of late been provided at the Perry Hill Nurseries of Messrs. James Carter & Co. of High Holborn. There are apparently thousands of plants, not a few of them large and admirably grown, the remainder smaller from late sowings, these latter often seeding more freely than the others. The plants are arranged in blocks of colour, there being two or three distinct forms of pure whites, whites suffused with rose and blue, and flaked forms, then the deeper shades of lilac, purple, blue, vermilion, and ruby selfs, the colours firm and decided, and the flowers of excellent quality. The collection is still effective, but as "brushing" for the purpose of fertilisation is performed daily, the blooms necessarily fade quickly, and seed capsules will soon be the prominent feature. Both plants and varieties are finer than we have hitherto seen them in this nursery.

— THE LAMBETH AMATEUR CHRYSANTHEMUM SOCIETY announced that their eleventh Exhibition will be held Tuesday and Wednesday, November 3rd and 4th, at the Hawkstone Hall, Westminster Bridge Road, S.E. A considerably improved schedule has been prepared, the prizes ranging from £2 to 5s. in the thirty-four classes, besides several special prizes, including four silver cups. Under the presidency of Mr. C. Harman Payne, and the good management of the courteous Honorary Secretary, Mr. G. S. Addison, aided by an energetic Committee, this interesting Society is making very satisfactory progress.

CALANTHE VESTITA AND C. VEITCHII.

THESE two Orchids can hardly be too highly recommended. They are almost unrivalled in the plant stove or intermediate house for flowering during the three dullest months of the year, and the flowers are invaluable for cutting for buttonhole bouquets, room and table decoration, &c. Some people object to them on account of their leafless appearance whilst in bloom. This, however, can be partly remedied by standing the pots in a good bed or groundwork of Maidenhair Fern. A stage neatly arranged in this way with good spikes of flowers from 2 to 3 feet in length, and a few bright Dracenas amongst them to break the monotony, has a fine effect.

Wherever there is a plant stove, a Cucumber, or Melon house Calanthes may be grown well. We generally grow our plants in the Melon house. Their culture is simple, the system we adopt being as follows:—After the plants have flowered we remove them from the stove or intermediate house to the Grape room, the temperature of which is seldom under 45°, and there they remain until March. By this treatment we find they start better and more strongly than when left in stove heat all the year round. Some time in March the pseudo-bulbs are shaken

out of their pots, and all the old roots cut off to within $1\frac{1}{2}$ inch of the pseudo-bulb. This we leave merely to steady them until the young growth has roots in the new soil. Instead of potting them at once, as is often practised, we insert the pseudo-bulbs in shallow boxes or pans in a compost of equal parts peat, leaf mould, and chopped sphagnum, placing them in a warm corner of the Melon house until they have started an inch or more. By this time we can readily see where the young growth starts, and consequently can have them in the exact place desired. The size of pot and number of pseudo-bulbs to have in each is a matter of opinion, and we have more frequently to be guided by the requirements of the establishment we are in than by any fixed rules.

The compost we employ for potting is equal parts of good fibry peat and loam pulled to pieces with the hands, rejecting all that passes through a quarter-inch sieve. To the above is added about a quarter of cowdung and sufficient pounded charcoal to keep the compost sweet and open. The pots ought to be thoroughly clean and well drained, with from 2 to $2\frac{1}{2}$ inches of drainage for an 8 or 10-inch pot, will be found ample, with a little sphagnum or rough peat over it. In potting we insert the pseudo-bulbs about level with the top of the pot, then press the soil as firmly as possible with the fingers, raising it slightly above the rim. The pseudo-bulbs should only be inserted deeply enough to keep them firm, and the old roots that were left on them will now be found of great service. Our object for keeping the bulbs so high is to leave room for top-dressing at least twice during the growing season, with the same compost as described above, only adding a little more cowdung and a sprinkling of Standen's manure. We prefer top-dressing to repotting, and water must be supplied very sparingly until they have filled their pots with roots, after which they can hardly be over-watered, and are greatly benefited by weak liquid manure at every alternate watering. Guano water answers the purpose well.

During the season of growth the plants must be kept as near the glass as possible, and are all the better for a slight shade in bright weather. They are subject to scale, and should it make its appearance the best plan is to sponge the leaves with tepid water and a little black soap. When the leaves are showing signs of dying at the points water should be gradually withheld, but not to the extent of allowing the plants to suffer. By the time the flowers are expanding the plants have generally lost most of their foliage, so that they need little water, the pseudo-bulbs acting as a reservoir.—A. SMITH.

STARVING v. GAS LIME AND WIREWORMS.

IN the Journal of February 19th "J. R. R." refers to the correction of a common error, that gas lime will kill wireworm. I can fully corroborate his remarks. Many years ago I broke up a field of pasture land for gardening purposes, where the brown hard-coated wireworm were abundant in the soil, and crops disappeared before their ravages. I buried some in fresh gas lime for twelve hours, and they came out as fresh as when they were put in. I was advised and tried many remedies to clear the ground of these pests, and I found my own the best. I starved them out, for I kept the ground free from even a weed for a few months, and I won the battle.—D. W. D.

FORCING HYBRID PERPETUAL ROSES.

YOUR correspondent "Thinker" need not have stumbled over the sentence in my article on page 168. I have never said that plants lifted in October would not produce good blooms in April and May grown under cool conditions. "Thinker" can scarcely call this forcing when the plants under cold-frame treatment will come naturally into flower at that period of the year; therefore I must still cling to the sentence that formed the stumblingblock. When "Thinker" has time to think about my past article on H.P.'s he will there discover that instead of differing we are of the same opinion. On page 564 I wrote—"On several occasions we have potted plants before the end of October, and before they have been removed from the outside to be protected in frames large quantities of roots have been formed round the sides of the pots." Again, on page 37 he will find—"The question next presents itself whether the plants are to be allowed to bloom, or must another sacrifice be made? Those intended for forcing the following season may be flowered without much detriment, but if the buds are removed directly they are visible the superior growth of the plants will more than compensate for the loss of the flowers."—WM. BARDNEY.

PLUMBAGO CAPENSIS OUT OF DOORS.

FOR the last twenty years I have filled two large beds with this old favourite greenhouse plant, and can fully corroborate all that has been said about its beauty and gracefulness. The two beds are situated on the south side of the mansion, from which they are separated by a walk about 10 feet wide. In this warm position they have always bloomed very freely in the late autumn months, and have been much admired. In the centre of each bed is a large vase, which is usually planted with *Humea elegans*; close around the vases are planted a few plants of *Gloire de Dijon* Rose, which are trained somewhat thinly so as to grow outwards and from natural arches over the beds.

The *Plumbago* is planted thinly over the beds, and grows freely amongst the Roses; between them are also planted the white-sepaled *Fuchsia Annie*, with an edging of *Mignonette*. These beds from August

onwards have a very novel and attractive appearance. To prevent the *Plumbago* growing too freely I have for the last two years plunged the pots instead of turning the plants out, and they have bloomed earlier and more freely in consequence. When taken up in the autumn the surface roots are taken off, the plants are then pruned hard back and kept in a cold house through the winter until February, when they are placed in an early vinery and started into growth, and, as before recommended, are hardened before planting out. Young plants from cuttings last year will bloom well if treated in the manner described above, but they must be planted rather close to produce any effect.—VITISATOR.

NOTES FROM MY GARDEN IN 1884.

GLADIOLUS.

I SHOULD not venture to harp upon a well-worn string but for two reasons—that I have received so many letters to say that the notes were acceptable to many owners of small gardens, and also because every year has its own tale to tell. It is one of the delights (!) of gardening that our varying climate gives us such varying experiences, for the failures of one year become the successes of another, and *vice versa*. One can never calculate upon our climate, and perhaps when we have done well in one department and are looking forward to another year of success in the same thing, some climatic influence comes in and alters it all, while things which have done badly before now seem to prosper. We were ready to lay the blame on bad cultivation or bad soil, but the cause was after all climatic.

The season of 1884 will long be remembered by all lovers of a garden as being one of the most trying that we have experienced for many years. Its effects we have not yet been able to estimate. Many herbaceous and alpine plants have, I fear, succumbed to the excessive drought that prevailed during so large a period of the year. When the rainfall is less by 6 inches than the average it must be trying enough; but when in the months of May and June the rainfall was hardly worth mentioning, it must of necessity have been that many things would succumb. All newly planted crops and annuals fared badly; constant watering became a labour, and after all it never takes the place of rain, while in many places water was almost as precious as in the Khartoum expedition. Happily this was not the case with us here, for there is an unfailing supply; but, withal, we suffered severely from the great drought.

Gladiolus, however, seemed to rejoice in it; in no year for the past twenty have I had so little disease, and never did the corms lift so well. Many of them had that nice silky look which characterises the French roots, thus, I think, showing what I have always maintained—that where they "have the pull" upon us is in their finer autumns, which conduce so much to the ripening of the corms and the consequent storing up of strength for another year, it can hardly be but that, when you are obliged to take them up while still green there must be considerable waste of strength; while if left too long the roots will begin to start, and the corm cannot then be taken up without injury.

In planting in the spring I did not make any alteration in my usual practice, save that I drew drills instead of making separate holes for each corm. I planted them in a part of my garden where I have grown them for years, although it was three years since they had occupied these same beds. They were planted in March and April, and under favourable circumstances as regards the condition of the soil. This portion of my garden is light, but I ventured this present year to try them in a portion of it which is stiffer, although well drained. Mr. Burrell of How House Nurseries, Cambridge, who is coming to the front as a grower, and I hope ere long as an exhibitor, has found them to do best in the soil that suits Strawberries and Roses. Mr. Dobree of Wellington, Somerset, our most successful amateur, grows his on stiff loamy soil. I know a portion of Mr. Kelway's, at any rate, is of this character, and so I am hopeful that this part of my garden may suit them.

The question of top-dressing has come before me as to whether it is advisable or not. I quite think that if you wish to have show spikes this must be adopted; but after seeing Mr. Dobree's fine exhibits at Taunton, and seeing that he did not mulch his beds, my opinion is somewhat shaken, and if in a dry season like this he could produce spikes which were equal to any that I have seen exhibited it would be less necessary to do so in seasons when moisture is more abundant. It is just possible that the manure may encourage the disease, which I think is now generally admitted to be the cause of so much loss to *Gladiolus* growers. As I mentioned in my notes on *Gladiolus* at Fontainebleau, I saw very little of this disease amongst the large quantity I saw there, but when a corm goes wrong it is immediately taken up and thrown away. The last season also demonstrated more clearly than ever how good a practice it is to cut the corms when they are large enough. Some of the finest spikes I had, and some of the best corms that I took up, were from those which had been thus treated, and in the case of dear ones it is of much importance thus to increase the stock. Another point that I would press upon growers is the necessity of saving all the spawn and sowing it in order to keep up the stock. Those of this year will in a couple of years form good flowering corms when, perhaps, the old ones have perished. They occasion but little trouble, as it is only necessary to make shallow drills and sow them in it, much as Onion seed is sown, and they are generally fit to harvest before the older corms are ready for lifting. When I was at Fontainebleau there was a large number of trays containing these cormlets in the store room, although it was only the early part of September, while some of the corms themselves were anywhere nearly ready for lifting. I placed this year an awning over my beds on account of the excessive heat, hoping thus to prolong the bloom, and so it did; but one

stormy night the whole thing was carried away, happily without doing much injury.

It is possible now to get a large number of some of the finest kinds at as low a figure as Hyacinths, and for a five-pound note a very fine collection may be had of some of the very best flowers. Those who go in for exhibiting will, of course, buy the more expensive varieties in Mr. Kelway's or the foreign lists; but for one's own gratification there are a large number which may be had for a small sum at 6d. or 1s. apiece. I have written about spawn, but it must be remembered that some varieties give much more than others, and this leads to a great difference as to the sorts that are cheapened. Thus Meyerbeer came out in the same year as Madame Desportes, but while the former can be had for about 4d. the latter is still about 2s. Horace Vernet, again, produces abundance of spawn, and is now cheaper than Adolphe Brongniart, which came out years before it. Sometimes Horace Vernet literally swarms with comets of all sizes, while I rarely get any off Adolphe Brongniart.

I have already in my notes on Fontainebleau written of the character of the newer varieties. Let me here add a list of some of the older ones which are cheap and will be sure to give satisfaction:—Meyerbeer, Dalila, Murillo, Adolphe Brongniart, Horace Vernet, Africaine, Sylvie Anna, Hesperide, Baroness Burdett Coutts, La Perle, Leandre, Shakespeare, Pasquin, Norma, Camille Schiller, and Orphée. These are all low-priced and all really good varieties, such as are found in the winning stands of exhibitors. As I have often said, the Gladiolus fares badly as an exhibition flower around the metropolis. Except at the Crystal Palace there is no place to exhibit them, and there amateurs get but little encouragement, only one class being devoted to them; the exhibitions which used to be held in the south-eastern part of this country have been abandoned, and yet at Dover and Deal I have seen as good exhibitions of this flower as anywhere. It is in the north and west that we alone see the flower encouraged as it ought to be. Personally, I did not send one spike from my garden to any exhibition last year. In writing as I have done of the French varieties, I do so because I have known them best. No one who has seen the collections exhibited by Mr. Kelway can fail to have observed how grand are some of the varieties that he has raised—indeed, I question whether any variety for size or length of spike has equalled his Duchess of Edinburgh; and as to his exhibits at the Crystal Palace, which were, it was said (I did not see them), behind Mr. Campbell's, it must be remembered that the latter grows for competition, while the former does not, and only takes his flowers to the shows as they may be at the time—indeed, with such an immense stock as he possesses it would be impossible for him to grow for competition. He has done much to popularise the flower, for which, I believe, he has a real love.—D., Deal.

AMONGST THE ORCHIDS.

MESSRS. J. VEITCH & SONS, CHELSEA.

DURING the past half century Messrs. J. Veitch & Sons have, first at Exeter and subsequently at Chelsea, given much attention to the great Orchid family, and this now constitutes one of the principal departments of their wonderful business. In the introduction of new and beautiful species or varieties from their native homes, in raising hybrids of distinct character, and in improving the methods of cultivation, this firm has undoubtedly contributed in a remarkable degree to the present popularity of Orchids. Hundreds of useful and handsome plants have been added to collections by the two former means, and meritorious novelties are brought into notice every season in surprising numbers, while some of the earlier productions are now seen in all the leading collections throughout the kingdom; and it is only necessary to particularise one of these—*Calanthe Veitchii*—as a striking instance. This lovely Orchid is now indispensable in many gardens, and with the old *Dendrobium nobile* it finds a place in thousands of gardens where no other members of the family are grown—abundant evidence of its usefulness. Especial success has indeed attended the efforts of this firm to obtain hybrid Orchids. Mr. John Dominy commenced the work with *Calanthe Domini*, the first hybrid Orchid known, and this was followed by many others, such as *Cattleya exoniensis*, *Cattleya Dominiana*, *Dendrobium Domini*, *Calanthe Veitchi*, and *Cypripedium Harrisianum*, until nearly thirty really valuable plants had been raised—most commendable results. Following such an admirable leader Mr. Seden has worked well and successfully, very largely increasing the number of hybrid Orchids, and scarcely a year passes without some notable addition being exhibited and honoured with certificates. The productions of these two skilled orchidists alone would render the Veitchian collections highly interesting and unique; but beautiful and wonderful as they are, there is something more to be seen under the acre of glass at Chelsea devoted to these plants.

Those who frequently visit the great London nurseries are so accustomed to the vast stocks of plants there seen that they occasion little surprise. Upon a stranger, however, the effect is very different, and the extent to which the trade in plants has developed appears almost marvellous. As an example of this a country gardener of long experience, who seldom visits the metropolis, writes, "Having an hour or two at my disposal when in London recently I called at 'Veitch's' with the special object of seeing the Orchids. It is many years since I have seen this great collection, and as I spent some time in the Exeter Nursery at the time when Mr. Dominy was making his fame in Orchid-raising, I feel a special interest in it. It had, however, quite outgrown my ideas. We passed through house after house filled with plants which at a moderate estimate must be worth some thousands of pounds. In several the plants were loaded with brilliantly coloured flowers, producing an effect which could scarcely be imagined by those who are unfamiliar with these

displays, and in all the plants were marked by that health which a grower only can fully appreciate. During a long experience I have never seen a collection of Orchids which so strongly impressed me, and they alone well repaid me for my visit."

Very few of those who are conducted through the Veitchian Orchid collections obtain a clear idea of the number of houses occupied with these plants, and many do not see the whole of the department. There are, however, twenty-six houses thus filled, and these vary in length from 20 feet to 132 feet; but if the divisions in all the ranges were counted the number would be still further increased. Not the least interesting of these is the house of seedlings, of which at least three thousand are to be seen in various stages of development, from microscopic plantlets to those approaching the flowering stage, and still others which have expanded their long-looked-for flowers, and have at last satisfied their foster-parent that his care has not been misplaced. One hybrid that has recently flowered in this house—*i.e.*, *Cypripedium leucorrhodum*—has been grown for nine years without an opportunity being afforded until early this year of determining the character of the plant. It is the result of a cross between *C. Roezlii* and *C. Schlimi album*, the former being the seed parent, and it presents an interesting combination of the characters distinguishing these two species. The flowers are of a soft rose tint, exquisitely delicate, and the habit of the plant is remarkably vigorous. Another charming hybrid is *Cypripedium Sedeni candidibulum*, a near approach to a white *C. Sedeni*, and which is certain to become a great favourite, as it possesses the free-growing and flowering characters of that well-known hybrid. It was obtained from a cross between *C. longifolium* and *C. Schlimi album*, and resembles *C. Sedeni* in the form of the flower, but the sepals and petals are white, the lip being of a pale delicate rose tint. This has been much admired, and is a particular favourite with the ladies. The lovely *Cypripedium Leeannum superbum* is still flowering, and, with the rosy-streaked or "tessellated" *C. tessellatum porphyreum* and the very dark *C. Harrisianum superbum*, constitute the chief attraction in that department just now.

ODONTOGLOSSUM HOUSE.

Visitors who wish to see Messrs. Veitch's Orchids are usually first conducted into a range leading off the centre avenue, from which all the houses can be readily reached. In the porch, that most useful adjunct to an Orchid house, miscellaneous plants, are arranged together with a few Orchids, of which the most notable is a fine example of *Cymbidium eburneum* showing a number of flowers, one specimen having had sixteen. The useful *Lælia albida*, the interesting hybrid *Chysis Chelsoni*, and the white-lipped *Miltonia cuneata* are also flowering, and with several others possess more or less interest. Adjoining this, however, is the *Odontoglossum* or cool house, in which there is now a very pleasing and varied display. Largely predominating are numbers of handsome varieties of *O. Alexandræ*, differing considerably in the size and form of the flowers; some also are pure white, some heavily spotted, and others beautifully tinted with crimson. *O. Pescatorei* is in abundance, *O. Halli*, *O. luteopurpureum*, and *O. triumphans* are similarly noteworthy; *O. Rossi majus* is beautifully represented; *O. Wilckeanum*, *O. gloriosum*, the charming little *O. blandum*, the delicately marked *O. Cervantesii*, *O. cirrhosum*, large and finely marked, with its pure white counterpart, *O. Hrubyanum*, all impart attractions in no mean degree to this house. Very conspicuous amongst the numerous light-coloured *Odontoglossums* is *O. Edwardi*, which has very dark purplish flowers, almost of a violet tinge, with a yellow lip, and being produced in large panicles, the effect is particularly striking. This Orchid will become a favourite in the cool house, as for contrast with the others it is unrivalled. Some superbly marked varieties of the *O. polyanthum* type are notable; one in particular, which is regarded as an improved *polyanthum*, but which is at present unnamed, has finely formed flowers with a bright yellow ground and bold chocolate blotches, most effective. A welcome brightness of colour is afforded by numerous plants of a *Sophranitis grandiflora* suspended from the roof, while large plants of *Ada aurantiaca* furnish a rich orange tint amongst the plants upon the stages. Of *Oncidiums*, the bright clear yellow *O. concolor* is freely and tastefully employed; the constantly flowering *O. cacullatum*, the peculiar darkly tinted *O. nigratum*, the distinct but little known *O. unguiculatum* with a yellow lip and dark sepals and petals, are all in good condition. There will shortly be a remarkably good display of *O. macranthum*, the numerous plants of which are producing their large panicles freely.

ANGRÆCUM HOUSE.

Especially notable in this house is a large batch of *Angræcum sesquipedale*, which, with their large wax-like flowers and extremely long spurs, always attract so much attention. "What purpose do these remarkable spurs serve?" is the question frequently asked respecting them, and inquirers are usually referred to Darwin's work on the Fertilisation of Orchids, where he observed that "in Madagascar there must be moths with proboscides capable of extension to a length of 10 and 11 inches" to enable them to reach the nectar and fertilise the flowers, that this opinion was ridiculed by some entomologists, but its probability was afforded a partial corroboration by the discovery in Brazil of a moth having a proboscis of the requisite length. Independent of the interest attached to such a plant, *A. sesquipedale* is a really handsome Orchid, and one which amply repays for the little good attention it requires. A species of *Angræcum* which is fast becoming an established favourite is *A. citratum*, which produces its compact spikes of small pale primrose-coloured flowers most liberally, when growing in tiny pans 2 or 3 inches in diameter. Suspended from the roof its graceful spikes dwarf slightly round the pan and have a very pleasing appearance.

Descending still lower in the scale as regards size, we come to the *Angræcum hyaloides*, a diminutive gem of much interest. One plant in a pot 2½ inches in diameter has seven spikes clustering closely round the stem; the flowers are very small, not half an inch across, white, and of a peculiar semi-transparent texture. Several plants of the fragrant *Dendrochilum glutaceum* are here bearing their elegant and odorous flowers in profusion, and the long-lasting *Saccolabium giganteum*, with two handsome racemes of white and purple flowers, add their charms to those of their neighbours.

PHALÆNOPSIS HOUSE.

The fogs that are usually so prevalent in London seldom permit the *Phalænopsis* in the metropolis to develop their flowers, and though the show of buds is often most satisfactory, a few hours of the dense smoky fogs is sufficient to spoil the best promise. This is frequently seen at Chelsea, but it is attended by a compensating advantage, since the plants grow strongly, producing broad handsome leaves, such as are seldom seen upon *Phalænopsis* which flower excessively. This season, though a

establishment of imported plants and similar purposes. But we must hurry on through the range leading at right angles to the one just noticed. In the first division of this, *Dendrobiums* of the *Ainsworthi* type are the special feature. The original *D. Ainsworthi* is in grand condition, flowering most abundantly, and filling the house with its delightful fragrance. Near to it is seen the Chelsea hybrid, of similar parentage, called *D. splendidissimum*, which, however, differs from *D. Ainsworthi* in possessing larger flowers, the sepals and petals tinged with purple instead of being pure white as in the older hybrid; the blotch in the lip is also broader, and the flower altogether has a bolder appearance, but is equally fragrant with its relative. A house of *Vandas* adjoining this will shortly present a remarkable display, as there are 132 spikes showing on the numerous strongly grown plants of *V. tricolor*, *V. suavis*, *V. teres*, and others which this house contains. Passing grand banks of *Dendrobiums*, such as *D. speciosum*, *D. Farmeri*, *D. densiflorum*, *D. thyrsiflorum*, *D. Devonianum*, *D. chrysotoxum*, *D. infundibuliforme*, *D. Jamesianum*, and several varieties of *D. nobile*, including *album* and *Ruckerianum*, the *Cypripedium* house is reached, where a dozen or more species and hybrids are now bearing



Fig. 37.—MESSRS. J. VEITCH & SONS' GREAT CATTLEYA HOUSE.

few buds have been lost, sufficient remained to produce a good display, and there are numerous panicles expanded now bearing their charming flowers. *P. Schilleriana* is largely represented, several of the forms being highly coloured and the flowers large. *P. Stuartiana* is very fine, and varies in the size of the flowers and the spotting on the lip. *P. grandiflora*, with its handsome white flowers, and *P. amabilis*, equally beautiful, are grown in scores, and the majority are bearing their flowers. In addition to those named, a beautiful and distinct form is now flowering, named *P. Porteana*, which is not so well known as it deserves to be. The flowers are of moderate size, with pure white sepals and petals, a bold nearly triangular lip of a rich crimson purple—a fine contrast to the purity of the other parts of the flower. The leaves are plain green, and the spikes few-flowered.

Several other houses are passed in this range, one devoted to a large batch of *Cattleya Trianae* and its delicately tinted variety *rosea*, while another is filled with *Lycaste Skinneri*, of which there are hundreds of flowers expanded, differing surprisingly in colour, from those with a rich crimson flush suffusing the petals and lip to the pure white and valuable *alba*. Still others are devoted to miscellaneous tropical Orchids, to the

their flowers freely, together with the beautiful *Cœlogyne cristata* and its delicate variety *Lemoniana*, with those from Chatsworth and Trentham. All these possess considerable attraction, and deserve fuller attention. But we are now approaching the leading feature in the nursery at the present time, and to this must be devoted a few words of description.

THE GREAT CATTLEYA HOUSE.

This magnificent structure is one of the largest ever devoted to Orchids, and now that it is filled with healthy well-flowered plants the effect produced is superb, and can only be fully realised by an inspection, though the engraving (fig. 37) will convey some idea of its appearance. The length is 132 feet, the width 22 feet, and the height 11½ feet to the lantern, so that abundant "head room" is allowed for the plants, and it had at one time been thought that this would be a disadvantage, but it has proved quite otherwise, as the plants have made a most satisfactory growth. The heating is effected by six rows of 4-inch pipes round the sides under the stages, and four rows of the same size under the middle stage. They are, however, conducted into the house at one side near the centre, so that when it is necessary to clean or paint the house a division

can be placed in and one half cleaned at a time. Both the side and centre stages are well elevated, so as to bring the plants as near the glass as possible, and a convenient path nearly 4 feet in width passes round the centre stage. Extensive tanks for rain water are provided in the centre of the house, and little rockeries of tufa help greatly to improve its appearance, as a structure of this size is apt to look bare and unfurnished without a little ornament.

Numerous species and varieties of Cattleyas, Lælias, and some Vandas are grown together in this house, but at the present time *C. Trianae* and its multitudinous forms are in the ascendant, 1100 flowers and buds having been counted chiefly of this *Cattleya*. All the *C. Trianae* varieties are beautiful, but some are unusually so, especially the delicately tinted rosea type, of which there are numbers in marked contrast with scores of others distinguished by the intense richness of their large crimson lips. None of these are named, they are all *C. Trianae*, but the merit of the variety is indicated by one, two, or three crosses, which is found more satisfactory than naming every variation produced. The magnificent *C. gigas*, with its grand crimson lip, is also in fine condition; while of others promising a later display may be named *C. Sanderiana*, *C. Percivaliana*, *C. Mendeli*, *C. Mossiae*, *C. Dowiana*, *C. Gaskelliana*, *C. Warneri*, *C. Skinneri*, *C. Eldorado*, and many more; while of *Lælias*, *L. purpurata* is strongly represented. *L. elegans*, *L. amethystoglossa*, *L. crispa*, *L. superbiens*, *L. anceps*, and *L. harpophylla* are all similarly noteworthy, the last named flowering profusely now.

It is not surprising that this wonderful house has attracted many admiring visitors during the past week or two, and all who see it at its best should take this opportunity, for plants are continually being disposed of and reducing the floral effect.—L. CASTLE.

ROYAL HORTICULTURAL SOCIETY.

MARCH 10TH.

It had been arranged that a promenade show should be held at this meeting, but as the conservatory could not be cleared in time the meeting was confined to the ordinary business of the Committees. There was, however, a number of groups of plants from some of the principal nurserymen and amateurs round London, and all the available space in the conservatory was occupied. The Committees were very fully attended.

FRUIT COMMITTEE.—Present: H. J. Veitch, Esq., in the chair, and Messrs. John Lee, Harrison Weir, John Woodbridge, W. Denning, Sidney Ford, T. Francis Rivers, G. T. Miles, J. Willard, Wm. Paul, Arthur W. Sutton, J. Roberts, Dr. Robert Hogg, G. Goldsmith, G. Paul, T. B. Haywood, Jos. Ellam, G. Bunyard, C. Silverlock, and R. D. Blackmore. Mr. Outram of Moore Park Road, Fulham, exhibited a seedling Apple of a Calville form and colour, and of a brisk flavour. Mr. Trower of High Canons sent some fruit of the Apple called High Canons, which received a certificate last year; it was remarkably fresh and with a fine brisk acidity. The Committee confirmed the high opinion given of it last year. Messrs. Rivers & Son of Sawbridgworth exhibited specimens of an American Apple called Sutton Beauty, a very pretty and handsome Apple, with somewhat of the appearance of Cox's Orange Pippin, but with the fine tender flesh and flavour of Newtown Pippin. It was in fine condition, the Committee entertained a high opinion of its merit. Wagener, another American variety of great merit, has very tender flesh, very juicy, and with rich flavour. Peck's Pleasant was another of the same lot, and was also of fine texture and flavour. Mr. George Lambert, Oakwood Gardens, Chichester, sent a dish of Catillac Pears. Messrs. Rivers exhibited a very fine collection of eighty-four dishes of Apples, which was of unusual interest, as well for the condition in which they had been kept as for the great number of novelties it contained. The Committee awarded it a large silver medal. Mr. Sidney Ford of the Gardens, Leonards Lee, Horsham, also exhibited a brilliant collection, consisting of fifty-two dishes, well grown, and very well kept. It consisted of the varieties usually grown in English gardens, and for the good condition in which it was exhibited the Committee recommended a large silver medal. Another collection from Wynnstay was not named.

FLORAL COMMITTEE.—Present, Shirley Hibberd, Esq., in the chair, and Messrs. G. F. Wilson, W. Wilks, J. Walker, John Laing, H. Bennett, W. Bealby, J. Douglas, John Fraser, H. Herbst, James Hudson, James Smith, John Dominy, H. M. Pollett, Thos. Baines, H. Cannell, James O'Brien, E. Hill, J. Child, Harry Turner, W. B. Kellock, and H. Ballantine.

Messrs. Page & Son, Teddington, sent a plant of *Cyclamen Spotted Queen*, which has large flowers, bluish streaked with crimson but more peculiar than beautiful. Mr. J. V. Rees, Tooting, showed a pan of *Megasea Stracheyi*, the plants bearing sixteen cymes of large flowers with white petals and a pink calyx. Several hybrid China Azaleas were exhibited by Messrs. T. Todman & Son, Upper Tooting; the most notable were Edith Todman, with neat double rose-coloured blooms, The Bride, and Mrs. Todman, having single white flowers. *Violet Wellsiana* was capitally shown by Mr. C. Turner, Slough, about thirty plants being staged bearing richly coloured fragrant flowers of great size. These are borne on long stalks, and are admirably suited for cutting and bunching. Mr. T. King, Rowsham, sent a box of *Primula* flowers of good size and variously coloured, indicating a good strain, and for which a vote of thanks was accorded. Thomas Acton, Esq., Kilmanagh, Wicklow, sent a few *Rhododendron* flowers. C. Scrase Dickens, Esq., Coolhurst, Horsham, contributed an interesting collection of single *Camellias*, some of which were highly coloured; a curiously streaked and one pure white variety with neat round petals was especially notable.

A small group of a dozen *Vallota purpurea* from Messrs. J. Carter & Co., High Holborn, attracted much attention, as it is seldom that these plants are seen in flower at this time of year. The flowers were large and extremely bright, well meriting the cultural commendation awarded for the plants. Flowers of the late Japanese *Chrysanthemum Ceres*, with narrow flat florets, white or slightly purple-tinted, were also shown very fresh and good. A vote of thanks was accorded to Mr. Edward Morse, Epsom, for a collection of Italian *Narcissi*, including *præcox* single and

double, and a single bright yellow form named *Umberto I.* From the Royal Horticultural Society's Gardens, Chiswick, were sent a number of well-grown plants of *Hebeclinium ianthinum*, compact specimens bearing large heads of their peculiar lavender-tinted flowers. *Saxifraga oppositifolia pyrenaica* with flowers of great size and dark purple colour, and several plants of the dwarf early *Cyclamen Atkinsi* were also shown from Chiswick. The Rev. Howard Watson, Pope's Hall, Boughton Malherbe, Maidstone, exhibited a plant of "An Oxlip in the Green" named Muriel Watson, which has a small foliaceous calyx and pale yellow flowers. Mr. John Crawford, gardener to Colonel Thorp, Coddington Hall, Newark, Notts, sent some good blooms of the old Neapolitan Violet for comparison with *Comte de Brazza*, the double white variety.

ORCHIDS.

Numerous small collections of these were exhibited, but they included several notable species or varieties that were found worthy of certificates. One of the best specimens at the meeting, and the best for its size that we have seen, was a *Lycaste Skinneri*, shown by Mr. W. G. Gaiger, gardener to S. Taylor Whitehead, Esq., Burton Closes, Bakewell. The plant was growing in an 8-inch pot, and had seventeen large flowers of a delicately tinted variety, the sepals and petals bluish, with a bright crimson lip. The cultural commendation awarded for the plant was well deserved, for it had evidently been thoroughly well grown. H. M. Pollett, Esq., Bickley, had a pretty little group, comprising a good example of *Miltonia cuneata*, which was certificated; *Odontoglossum blandum*, with two spikes of its small but charming flowers; a fine variety of *O. Sanderianum* with thirteen flowers; *Epidendrum xanthinum*, with three spikes of small yellow flowers; *Cœlogyne cristata alba*, with pure white flowers, very beautiful; and *Lycaste gigantea*, with large dull yellowish green drooping flowers. G. F. Wilson, Esq., Weybridge (Mr. H. Chamberlain, gardener), contributed a spike of a most interesting and beautiful Orchid, and of which very few flowers have yet been publicly shown—namely, *Phaius tuberosus*. The spike sent had ten flowers and buds, the expanded flowers being about 3 inches in diameter, the sepals and petals pure white and wax-like in substance. The lip is scoop-shaped with revolute sides, which are yellow with numerous small reddish brown irregular dots; the centre is white with three small yellow ridges in the middle, and an undulated purplish apex, a slight tinge of this colour also running up the lip as a margin to the white centre. It has a peculiarly rich and handsome appearance, and was greatly admired. Mr. Ballantine, The Dell Gardens, Egham, showed a magnificent variety of *Odontoglossum Wilckeanum*, named *Godefroyæ*, which was certificated. He also had a grand form of *Odontoglossum mulus*, with large yellow and brown-barred flowers, and a pretty unnamed *Odontoglossum*, having white flowers blotched with dark chocolate. Mr. H. Adams, gardener to R. B. Lemon, Esq., The Avenue, Beckenham, was awarded a certificate for the peculiarly distinct *Oncidium Brunleesianum*, which is described with the other new plants. Mr. N. C. Cookson, Oakwood, Wylam-on-Tyne, showed a plant of *Dendrobium nobilissimum*, a variety of *D. nobile*, differing from the ordinary forms in the large dark blotch of crimson on the petals, which closely resemble the lip in *D. Ainsworthii* both in colour and form. *Dendrobium crassinode album*, and several plants of *Cattleya Trianae*. Mr. James Moon, Mark Hall Gardens, Harlow, Essex, also sent flowers of a *Dendrobium* similar to that from Mr. Cookson, but this was stated to be "a sport" from *D. nobile*, and was named *D. nobile Moonianum*. Messrs. Shuttleworth, Carder, & Co., 191, Park Road, Clapham, showed examples of *Odontoglossum Humeum*, which appears to be large and handsome, *O. Rossi*, and of *O. aspersum*, which is like a small *O. Rossi* with yellowish petals. A vote of thanks was accorded for these. M. Godefroy Lebeuf, Argenteuil, France, exhibited a species of *Pleurothallis*, which has dark claret-coloured drooping flowers, the sepals and petals closed round the small lip, which is covered with minute papillæ. A vote of thanks for accorded for the plant and *Cypripedium Saltieri* from the same exhibitor. This is a hybrid between *C. insigne* and *C. villosum*, and is interesting, as showing the combinations of both parents' characters, but is not of particular beauty. D. B. Crawshaw, Esq., contributed flowers of *Cattleya Warszewiczii superbissima*, that were very large and of a soft and most pleasing rose colour. Several good varieties of *C. Trianae* were also shown from the same collection. Mr. H. James, Norwood, sent a very handsome *Cattleya Trianae* named *Jamesiana*, with wonderfully large petals 3 inches in diameter, of a bluish tinge; the lip is of an exceedingly rich crimson hue neatly fringed with white. *Odontoglossum cirrhosum grandiflorum*, having large richly marked flowers, was similarly well shown by Mr. James. Mr. W. Bull, Chelsea, included several notable Orchids in his collection of miscellaneous plants, especially noteworthy being a large well-grown specimen of *Dendrobium glumaceum* with over fifty flower spikes, for which a vote of thanks was accorded. *Odontoglossum sceptrum* had a long raceme of its handsome flowers, mottled with rich brown on a yellow ground, the lip large and neatly fringed. *Saccolabium calceolare*, like a minute *S. bellinum*, with a similar cup-like lip, the pretty purplish *Cypripedium Warneri*, *Odontoglossum Pescatorei*, with the white and crimson *Calanthe Regnieri*, were also included in the collection.

MISCELLANEOUS GROUPS.

Cyclamens and *Cinerarias* from several good growers were important features, while the *Camellias* from Messrs. W. Paul & Son, Waltham Cross, formed a beautiful and admired group, representing a large number of the best varieties. About sixty plants in pots were contributed, several being flowering very freely. The most notable of the varieties were the following:—*Madame de Strekaloff*, pink, with white centre bars; *Cup of Beauty*, pale bluish, of most exact symmetrical form; *Mrs. Anne Hovey*, white or pale bluish, beautiful form; *Augustina superba*, clear pink, broad petals, well imbricated; *Ninfa Egeria*, white, of excellent form; *Comtesse de Hainaut*, large pale pink, with broad round petals; *Tricolor imbricata*, white, with crimson streaks; and *C. H. Hovey*, dark red, good shape. A silver-gilt Banksian medal was awarded for this group, and a silver Banksian medal was also awarded for twelve boxes of *Camellia* blooms from the same firm. The varieties already mentioned were represented amongst these, and in addition the following were of especial merit:—*L'Avenir*, clear rose, of beautiful form, imbricate with a little white at the base of the petals; the old *Alba Plena* was in its usual good condition; *Henri Fause* was distinct, with small round closely imbricated light pink petals; *Marchioness*

of Exeter was very showy, large and bright red, the petals irregularly cut; Monteroni of good substance, white; Chandleri, dark red; Donckelaeri, single red, with white marbling; and the charming Fimbriata, with pure white beautifully fringed petals.

Cyclamens were admirably shown by Mr. H. B. Smith, Ealing, who had 300 plants in excellent condition, dwarf, healthy, and most profusely flowered. The award of a silver Banksian medal signified the Committee's appreciation of this exhibit. Mr. B. S. Williams, Upper Holloway, showed 100 plants of Cyclamens well grown and freely flowered, representing the Improved Holloway strain, and for which a bronze Banksian medal was awarded. Mr. J. James, Farnham Royal, Slough, was awarded a silver-gilt medal for a magnificent group of about sixty Cinerarias, compact vigorous specimens, bearing large richly coloured blooms; crimson, rose, magenta, purple, violet, and white selfs, with bicolor varieties in which similar colours predominate, with a white centre. Some of the blooms were 3 inches in diameter, of surprising substance, and beautifully symmetrical.

Hardy plants and flowers were contributed by several firms, and formed a pleasing addition to the other attractions. Bronze Banksian medals were awarded to each of the following:—Messrs. Barr & Son, Covent Garden, had a large number of Daffodils, the early Narcissus pallidus præcox, pale yellow, and the second early Daffodil N. obvallaris, with bright yellow flowers of neat form. With these were the small N. minor, the diminutive gem N. minimus, the double N. Telamonius plenus, an early variety, and the charming little Hoop Petticoat Narcissi, N. Corbularia alba and conspicua, the former white, the latter bright yellow, and N. monophyllus. The beautiful Iris reticulata, the brilliant scarlet Anemone fulgens, the bright blue Chionodoxa Luciliæ, and C. sardensis, which differs from that in its darker blue colour, and several seedling Freesias. Mr. T. S. Ware, Tottenham, also had a varied and pretty collection of hardy plants. Cyclamen Coum and its white variety were very well shown, seven pans being included, the flowers small but very neat. Numerous Daffodils were represented; Chionodoxa Luciliæ, Iris reticulata, the yellow Lachenalia Nelsoni, and Anemone fulgens were notable. Iris stylosa, with delicate lavender mauve flowers, the base of the falls veined with white, and a yellow centre; the floriferous Primula obconica, with the fragrant Freesia refracta alba, Ranunculus anemonoides alba, and Scilla bifolia alba. Messrs. Paul & Son, Cheshunt, had several pretty Saxifrages, comprising S. Sanctæ, with numerous yellow flowers; S. Burseriana, white flowers; S. oppositifolia major, very large and of deep colour; and Alba, pure white. Megasea Stracheyi was in fine condition, the purplish Bulbocodium vernum, the distinct lilac-coloured Daphne Gwenka, and the dwarf Rose Mignonette and White Burgundy. Mr. W. B. Hartland, Cork, sent several Daffodils, including N. capax and other curiosities.

Messrs. H. Cannell & Sons, Swanley, exhibited a stand of a dozen bunches of single Zonal Pelargoniums, brilliantly coloured. Particularly fine were Brunhilda, scarlet; Queen of the Belgians, white; Dante, cerise scarlet; Kate Greenaway, rose pink; and Edith Little, pale pink. Coleus Ariel is a neat and bright variety, the leaves having crimson centres margined with green and yellow. Several plants of Spiræa japonica, forced home-grown roots, were staged to show that these plants can be had in satisfactory condition by this means. They were healthy and flowering freely. A vote of thanks was accorded for this collection. Mr. W. Bull, Chelsea, was awarded a silver Banksian medal for a large group of plants, including several Orchids which have been already noted. In addition to these the following were very handsome:—Hæmanthus Kalbreyeri maximus had twelve scapes of its bright red flowers; Griffinia hyacinthina had numerous scapes of lilac-blue flowers, the lower petals of the flowers being lighter and nearly white; and Clematis indivisa lobata, with numerous white flowers. Messrs. J. Veitch & Sons, Chelsea, were awarded several certificates for Orchids and other plants; but in addition to these there were specimens of Cydonia japonica nivalis, with pure white flowers; Crocus John Bright had very dark purplish blue flowers; Rhododendron delicatum, one of the greenhouse hybrids, had a large truss of twenty-four pale pink flowers of good form. Some healthy plants of Boronia megastigma were also bearing abundance of their fragrant flowers.

CERTIFICATED PLANTS.

Dendrobium endocharis (J. Veitch & Sons).—A hybrid between D. japonicum and D. heterocarpum, and partaking largely of the character distinguishing the latter. The flowers are white or of a creamy tint, with a pale crimson blotch in the centre of the lip. They are very fragrant, and are produced in dense clusters along the pseudo bulbs.

Cypripedium Sedeni candidibulum (J. Veitch & Sons).—A hybrid between C. longifolium and C. Schlimi album. It is an approach to a white C. Sedeni, which it resembles in form and habit; the sepals and petals are white, the lip being pale rose. It is very free, and will become a useful and favourite Orchid.

Rhododendron cardinale (J. Veitch & Sons).—One of the greenhouse hybrids, with large well-formed flowers, the lobes round, and the colour a most intensely rich dark scarlet, quite unequalled amongst these beautiful plants.

Crocus King of the Blues (J. Veitch & Sons).—A handsome variety with large dark purplish blue flowers. It will prove most valuable for spring bedding.

Imantophyllum Baroness Schröder (Mr. Ballantine, The Dell Gardens, Egham).—A beautiful variety, distinguished by the great size of the flowers, their fine rounded lobes, and their exceedingly bright red colour.

Odontoglossum Wilckeanum Godefroye (Mr. Ballantine).—One of the finest varieties of the type that has yet been obtained; the flowers large with broad petals, these and the sepals being pale yellow, very densely spotted and blotched with deep red. The flowers have a peculiarly bold and distinct appearance.

Oncidium Brunleesianum (Mr. H. Adam, gardener to R. B. Lemon, Esq., Beckenham).—A remarkable Orchid, very distinct and interesting, but scarcely what could be termed beautiful. The pseudo-bulb is slender, spindle-shaped, about 4 inches long. The flowers are about 1 inch in diameter, and are borne in compactly branched slightly drooping panicles. The lower sepal and the two petals are spreading, very pale yellow, almost transparent, with a few darker bars near the tips of the petals. The upper sepal is depressed upon the lip, which has two bright yellow wings; these,

with the sepals, form a kind of tube. The apex of the lip is dark maroon, and the general appearance of the flower is somewhat suggestive of the little *Tinnæa æthiopica*.

Lachenalia Aldborough Beauty (Barr & Son).—A strong-growing variety with pure yellow flowers 1¼ inch long on a stout spike. It is one of the L. Nelsoni type.

Daphne Gwenka (Paul & Son, Cheshunt).—Very distinct, with flowers resembling the Lilac in colour and form. They are borne in numerous clusters on the branches. It is a Japanese species, and was introduced in 1866.

SCIENTIFIC COMMITTEE.—Hon. and Rev. J. T. Boscawen in the chair. Present:—Messrs. Grote, Michael, MacLachlan, Pascoe, Smce, Murray, Ridley, Beddome, Lowe, Wilson, Dyer, and Masters.

Injury to Leaves of Mormodes.—Mr. Michael reported that the gall-like swellings on the leaves of Mormodes submitted to his examination by Mr. Smce were caused by an acarus of the genus Tarsonemus. The species appears to be identical with T. Buxi, which nearly destroyed the foliage of B. sempervirens in the Botanic Garden at Padua.

Sclerotoids in the Potato.—Mr. Pim sent a communication, in which he stated he had found nothing to confirm Mr. Murray's views; but he considers it not yet proven that these bodies have any connection with the disease.

Professor Trail in his communication repeats his conviction that the protoplasm is within the oxalate of lime, and gives reasons for his opinion. Professor Trail also suggests that observers should look for similar bodies in the Tomato.

Mr. A. S. Wilson also repeats his opinion that the lime is outside the ball of protoplasm. As to the protoplasm on the outside of the bodies, which Mr. Murray attributes to the contents of the cells containing the sclerotoids, Mr. Wilson points out that the bodies in question are in the intercellular passages, and that they occur in the undiseased tissues, the fungus being in a state of rest. Mr. Wilson's communication was illustrated by drawings magnified 1350 times, and seen before and after the action of nitric acid.

Mr. Murray in his reply points to the want of direct evidence of a protoplasmic body within the lime, and alleges that the *onus probandi* lies with the author of the statement.

Mr. W. G. Smith sent a communication, in which he says that the important point is whether or no these bodies give rise to fungus threads, as Mr. Wilson says, and as Mr. Smith has also seen confirmatory evidence, and sent a drawing showing the hyphæ with conidia arising from a sclerotoid in a specimen sent by Mr. Wilson, Mr. Smith considers that Mr. Murray has adduced no evidence against Mr. Wilson's views.

Egg Cases of Mantis.—Mr. McLachlan states that the egg cases produced on a species of Bæckeia were those of a mantis.

Phaius tuberculosus.—Mr. G. F. Wilson showed a spike of the lovely Phaius tuberculosus which had been grown in a close house kept at a temperature of 65° to 70°.

Dianella cœrulea.—Dr. Masters showed drawings of double flowers of Dianella cœrulea, the most remarkable point about which was the petaloid state of the ovules.

Knaur on Taxodium sempervirens.—Mr. Webster sent, from the estate of the Duke of Richmond at Gordon Castle, a fine specimen of knaur on the underground stem of this plant. These growths probably originate from injury to the root in its seedling stage.

Double Orchids.—Messrs. Veitch showed a flower of Cattleya Trianae with three lips, and one of Odontoglossum Rossi majus with a supplementary lip.

Spiny Branches of Privet.—Mr. Greenwood Pim sent branches of Privet clothed with stout conical spines or abortive branches.

Miscellaneous.—Flowers of Anemone fulgens hortensis, Tulipa biflora with numerous flowers, Rhododendron fulgens, and Iris stylosa, were also sent.

PLATYLOBIUMS.

THERE are several genera of leguminous plants, which include species of great use in the greenhouse, and the majority are ornamental in some degree. These are mostly Australian plants, and therefore only require a medium temperature to ensure their success. They all, however, need some care in preparing the compost and in regulating the supply of water, so that the soil is never unduly dry nor wet.

The genus *Platylobium* is characterised by the upper lobes of the calyx uniting and forming a large rounded upper lip. The seed pod is flat, broadly winged on the upper edge, many-seeded. The species here included are all handsome greenhouse plants, well worthy the attention of plant-growers. Pot in fibry peat and loam in about equal parts, with a good portion of sand added.

P. TRIANGULARE.—A charming species. It is a free-branching compact plant. Leaves opposite, acutely triangular, and furnished with a sharp spine at the apex of each angle, deep green on the upper side, paler below. Flowers produced in pairs, axillary, whilst in the bud of a bluish slate colour, when open very brilliant; the standard being rich orange with a central radiating belt of crimson, the wings being rosy crimson. It flowers during June and July.

P. FORMOSUM (fig. 38).—This species well deserves its name, and, like many others of the class to which we would draw attention, would soon become universal favourites if only shown to the horticultural public in good condition. It is a free-branching plant. Stems slightly hairy. Leaves opposite, ovate, ending in a sharp point, dark green above, paler below. Flowers axillary, mostly in pairs, the buds deep crimson; when

expanded the back of the whole flower retains this colour, whilst the front side is rich orange yellow, saving a reniform belt of radiating crimson lines near the bottom of the standard. The flowers are produced through the months of June, July, and August.

P. MURRAYANUM.—Leaves acutely triangular, armed with a sharp spine at the apex of the angles, opposite, and dark green. Flowers large and freely produced, on footstalks longer than the leaves; colour clear yellow, with a band of deep red at the base of the standard. It flowers in May and June.

P. PARVIFLORUM.—The name of this would lead one to infer it is worthless, but its size is only comparative, for although smaller than those previously named it is still large enough to be very showy. Leaves opposite, ovate lanceolate, smooth and dark green above. Flowers



Fig. 33.—*Platylobium formosum*.

axillary, mostly in threes; colour clear orange yellow, the standard streaked with crimson. It flowers during June and July.—W. G. T.

NOTES ON PLANTS.

JASMINUM GRACILLIMUM.—This is the most beautiful of all indoor Jasmīnes, and as useful for general decorative work as it is beautiful. Nothing can be more charming than a well-grown specimen of it when seen covered with its large compact trusses of pure white fragrant flowers, and no plant is more easily made to form such a specimen. It may be had in flower both winter and summer by growing batches of it under slightly different conditions. It is distinctly tropical in its requirements, and loves an abundance of moisture both at the root and overhead. Grown so as to form a pyramid, this Jasmine forms a charmingly graceful specimen plant; it is equally satisfactory when trained along near the glass and treated as a climber. When once fairly established it makes quick growth, and by pinching out the points of the strongest shoots numerous twiggy branches are formed, upon every one of which a bunch of flowers is produced. Cuttings of it strike as freely as

Verbenas. An Australian Jasmine named *J. gracile* may possibly get confused with this beautiful Bornean one, though in appearance and beauty the two have nothing in common.

WINTERING CALADIUMS.—I am persuaded that the safest treatment for Caladiums when at rest in winter is not that recommended by some teachers, but almost contrary to it. Here is my experience. Last spring, on turning out our Caladium tubers we found a large proportion of them rotten, and nearly every one more or less affected. These tubers had been kept perfectly dry upon a shelf in a warm house. We are told that excessive moisture is the cause of losses among these tubers when at rest. Excessive, yes; but what is excessive in the case of Caladiums, even though at rest? In their native habitats these plants as well as every other Aroid with a tuberous rootstock spend their resting period in swampy land; they never get dry, nor anything like it. Accepting Nature as a safe teacher, at least in this case, the tubers which we are now potting and placing in bottom heat have been wintered in a moist corner in a temperature of 55° to 60° where they never become dry. We have hardly a diseased tuber this year. I am told that at Kew, *Arisæmas*, *Amorphophallus*, and such plants are preserved through the winter much more successfully in moist soil than when taken out of the soil, or allowed to get dry. I believe this is the safest as well as the most natural mode of wintering all tuberous-rooted Aroids.—W. N.

SAXIFRAGA MARGINATA, although rarely found among collections of these alpine gems, is perfectly hardy near London on dry slopes or wedged between stones on the rockery. It belongs to the section which Engler in his Monograph calls *Kabschia*, the leaves being all pitted, and having lime secreted at intervals along the margins, which enhances the neat little tufts or rosettes. Old lime rubbish, with just sufficient loam to keep it firm, seems to be the best compost, and in which the plant should be firmly wedged. The flowering stems rarely exceed 6 inches in height, the flowers as large as *S. Bursariana*, and pure white, with just a tinge of purple on fading, about a dozen in each head. It is a native of Italy, and specimens were introduced from Minori through the agency of Mr. Maw two years ago, and later, we believe, from Spain by Mr. Lacaite. It commences to flower in March in mild seasons.

GAULTHERIA PROCUMBENS.—The creeping Winter Green is now loaded with its bright red berries. Indeed, it is one of the most attractive objects at present on the rockery. Rarely more than 3 or 4 inches high, it creeps and covers ground in cool peaty places in a surprising manner, the only trouble being to keep other plants out of its way. The leaves also assist in lending a charm to this plant, attaining in the autumn a deep blood red tint, which makes a fine contrast with the berries. The pretty little white flowers are produced early in June, when water should be given unsparingly until the berries are formed. It is found in deep shady woods in North America, where it is said to be used as a substitute for tea. It may be easily increased by sowing the berries in pots in cold frame or by division, the latter being much the easier process. It makes a fine hedging plant.

PRIMULA FLORIBUNDA.—This is the only one out of a score or more in flower with us at the present time. On its first introduction hopes were expressed of its proving hardy raised from home-grown seeds, but I am afraid our experiments were against this conclusion. Some large plants were placed out last summer in a sheltered position on an easy slope, and all succumbed to the second frost, which was not very severe, their end being perhaps hastened by the foggy weather experienced about that time. Others planted on an old wall are now showing flower. The latter plan I think much the best for all plants of doubtful hardiness, as there they may have the advantage and protection of glass cut in squares and inserted directly above the plants. Besides protecting the plant from frosts and damp in winter it serves as a ready conveyance for water in summer, it really being very useful where the plants are on the perpendicular. In cold frames it flowers freely more or less all through the winter months, and sure to become a favourite for the greenhouse, supplying a neat habit and excellent colour, much in demand at that time. Plants for this purpose may be easily had by sowing the seeds directly they ripen and growing the plants in a cool frame. They begin flowering early in December, continuing through the summer months.

I find the seedlings are variable, some having one others two or more petals above the usual number, which in time, with careful selection, will no doubt become double. It grows from 6 to 8 or 10 inches high, the leaves oval, margins crenated, and the whole densely covered with stiff hairs. The flowerstalks are leafy, much-branched, and the bright yellow flowers numerous. It is a native of the Himalayas, about 7000 feet high, and although perennial gives more satisfaction grown as an annual.

BULBS.—Just now the spring Crocuses are flowering freely and extremely pretty; they are peeping from among the grass in company with the pearly Snowdrops and Winter Aconite. *C. Imperati* and *C. versicolor* seem to be the most plentiful, large, and beautifully pencilled or feathered. *C. Susianus*, perhaps better known as Cloth

of Gold, is very handsome; the flowers are of a clear golden yellow, prettily bronzed on the backs, and, curving over from the middle of the segments when old, show their own interior. The old *C. stellaris* is just coming with its yellow and brown-streaked flowers. *C. chrysanthus*, pure yellow, self-coloured, flowers small. All the above are well worth growing; they are easily naturalised, and almost carry us from the autumn-flowering ones until the wild Hyacinth is blooming.

Colchicum luteum is also very handsome at present in the open border, its large clear yellow flowers making a good show. *C. crociflorum* is also pretty but small; the flowers are greyish white with distinct purple lines from the base to tip of the segments. *Leichtlin's Milla* has been flowering unheeded for the last fortnight; the flowers are pure, almost transparent white, as large as a shilling, with a prominent green rib in the centre of each segment. It is rather unfortunate they are produced on such short stalks. The Paper Daffodil (*N. papyraceus*) the first of the season, opened its beautiful white flowers the other day. It is really handsome and ought to be grown in quantity. The Squills have also begun to show themselves. Both *Scilla bifolia* and *S. sibirica* seem to be stronger and better coloured than hitherto after the warm summer. *S. taurica* is also showing flower, and last but not least *Galanthus nivalis* Melvillei, which is much more admired both for size and purity than *G. Elwesii*. — M. S.

THE RAIN GAUGE.

A REGISTER of the amount of rainfall is both useful and interesting to gardeners. When a man has a record of the amount that has fallen he is in a better position to judge as to the state of his fruit tree borders or his vegetable quarters than he who sees the passing showers but can form no correct estimate of what has fallen. It is interesting to note that in some years we have great quantities of rain in the early months of the year, while in others we have heavier falls in the autumn, and to watch the result on vegetation. It is also interesting and useful, too, after a number of years' observation, to be able to arrive at the correct average for the district.

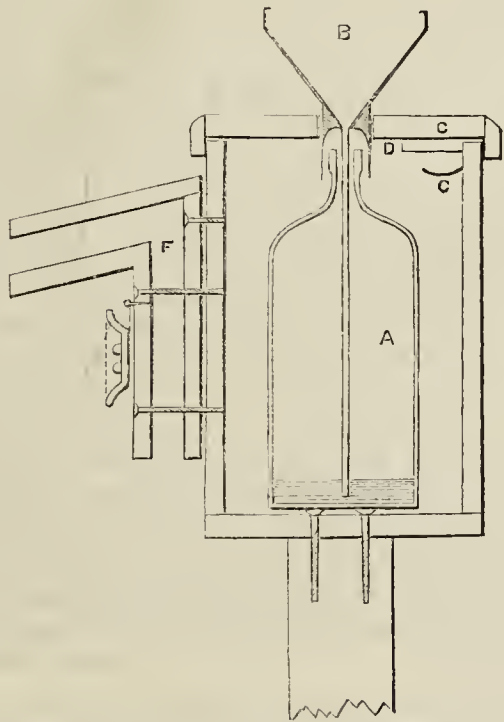


Fig. 39.—Section of Rain Gauge.

I have sent you a sketch of a simple and inexpensive mode of fixing a rain-gauge and thermometer stand combined. Fig. 39 is a section showing the bottle A, into which the rain passes from the funnel B, through the small tube reaching to the bottom of the bottle, so that but little evaporation can take place. The funnel should be fixed into the lid of the box C, so that the lid and funnel may be lifted together. In one corner of the box a small portion of the box should be cut away, as at D, to admit of the glass measure being kept there, and held in position (inverted) by a loop of wire, as at E. The box should be from 6 to 7 inches square inside measure and made of three-quarter-inch deal. The double-boarded thermometer shade should be fastened to the side of the box facing north. The ends and top should be about 8 inches wide, so that the sun does not strike on the thermometer in early morning or evening, and there ought to be a clear air space of an inch or more between the outer and inner cases at F. The box containing the gauge should be fixed on

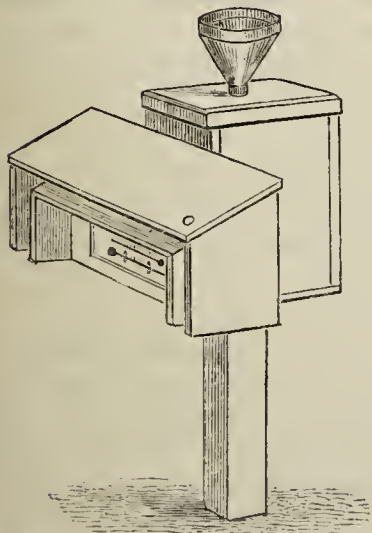


Fig. 40 —Gauge complete.

to the top of a square post by means of screws, and great care must be taken to have it quite level. A convenient height is 3 feet from the ground to the top of the gauge. Fig. 40 shows the gauge complete.

The gauge should be examined every morning about nine o'clock, the rain carefully measured, and the quantity put down in a column in a note-book, along with the highest and lowest temperature registered during the previous day and night. To make these notes more useful and interesting it is a good plan to reserve the opposite page of the note-book for notes of various matters, such as when certain crops were put in, and when they were fit for use. It might also be noted down when various early spring plants and fruit trees, &c., come into bloom for comparison with other seasons.

The rain gauge is a matter for the employer to supply more than for the gardener, but for the information of any who may wish to get one I may state that the copper 5-inch funnel, the bottle and graduated glass measure can be purchased for about 16s. or 20s., and a fair good self-registering thermometer can be had for the same amount. I ought to have pointed out that the gauge must be placed in an open position, clear of trees, walls, or buildings. Anything in the neighbourhood must be a distance from the gauge equal to double the height of the object.— R. INGLIS.

DENDROBIUM NOBILE NOBILIUS.—This superb variety is now flowering in several establishments, and we recently saw some flowers of unusual beauty. The distinguishing character of this variety is the rich crimson purple hue suffusing the sepals and petals, and extending nearly to the centre. The flower has also a very bold appearance, with an open dark crimson lip.



HARDY FRUIT GARDEN.

GRAFTING.—This is a branch of fruit gardening of considerable importance at this season of the year, for by it we are enabled to render old trees fruitful which have long been barren and useless. Many young trees, too, especially among Pears, may have to be regrafted, for no fruit is so much affected by the influence of soil and climate as this is. The last edition of the "Fruit Manual" affords striking proof of this, sorts of the highest excellence in one district being found worthless in another. However careful, therefore, may be our selection of sorts some will certainly prove inferior, perhaps worthless. This we are unable to ascertain till the tree is furnished with branches and is fast assuming its form of standard, bush, or pyramid. Instead of destroying it we shorten each branch to within a foot or two of its base, according to its position upon the stem, and insert a graft in each branch and one in the top of the stem. For example, a pyramid should have the lower branches reduced to about a foot and the upper ones to 6 inches; a standard should have its main branches reduced to about 2 feet, while the branches of a dwarf bush should be quite a foot shorter. Cordons should be regrafted by approach if possible, and it will be so if the inferior sort is planted next to a good one, from which a shoot left near the bottom for the purpose is bent across and grafted upon the other stem, but it is not severed from its own stem till the following autumn; but as soon as the union of stock and scion is so far effected that the bark has grown together the sap of its new parent is diverted into the scion by the removal of a part or all of the spurs above it as appears necessary. Grafting by approach may also be applied to young pyramids having bare places, one of its own branches being pulled into and fastened to the stem for the purpose. It is very seldom that this is necessary if a tree is carefully pruned and trained from the first. Misshapened trees are more frequently attributable to an undue eagerness for the production of fruit as soon after the planting as possible than not, for it certainly requires a considerable amount of philosophy to enable one to unflinchingly use the pruning knife upon those fine nurseryman's pyramids "well set with fruit buds," when the said buds are upon a fine showy head surmounting 2 or 3 feet of bare stem. We invariably behead such trees before planting, and it is precisely for that reason that we have never had to practise grafting by approach upon any of our pyramids, and we have hundreds of them. Of old barren trees, espaliers or wall trees trained horizontally should have the branches shortened to a foot or even less, only enough of the old branch being required for the insertion of the scion. Old standards require careful consideration before a branch is cut off. We do not require fruit in the interior of the head, and therefore we leave all that part of the tree intact as a framework and support for the new branches to be obtained by grafting. Avoid regrafting with many early sorts of Pears, however much they may be liked. The period of ripeness of all is far too brief for us to require many of them. Intermediate and late sorts should have preference, a surplus of such fruit always being available for culinary purposes.

Considerable experience has shown that many of our best Pears are not always invariably good or bad in the same garden. For example, we have had fruit of such well-known sorts as Doyenné du Comice, Comte de Lamy, Urbaniste, Duchesse d'Orleans, Marie Louise d'Uccle, and Madame Treyve excellent in some years and quite second-rate in other

years from the same trees. Good Pears are a fruit of seasons as well as of soil and climate, and for this reason do not hastily condemn the trees of any sort of known merit. Remember, too, the great advantages of planting cordons of many sorts by way of trial. Fruiting cordons may be had now for a shilling or two apiece. At 18 inches apart space may be found for a considerable number in a small garden, and a wall of such trees is at once a feature of interest and of great utility.

FRUIT FORCING.

FIGS.—Early-forced Trees in Pots.—The fruit having completed its first swelling will appear to remain stationary for some time; and as this is the most critical period in their culture every attention must be paid to the trees, as any check caused by too high a night temperature, sudden fluctuations, injudicious ventilation, and want of moisture either at the roots or in the atmosphere, is likely to cause the fruit to fall when the time arrives for the last swelling. If the weather is mild the night temperature may be kept at 60° to 65°, but when cold it will be well to keep it 5° lower on frosty nights. To compensate for this apparent loss of time a considerable advance may be made by keeping the temperature through the day at 75° to 80° from sun heat, and by closing at 80° with plenty of moisture, allowing an advance of 5° to 10°. This will not have the tendency to produce weak or elongated growths, as would be the case were the attempt made to accelerate the growth by sharp firing. Let the roots receive a steady supply of tepid liquid manure, as the Fig in full growth requires liberal nourishment, especially when the drainage is good for if stagnant the consequences are most disastrous. Thorough syringing on all favourable occasions are absolutely necessary to keep red spider in check.

Succession Houses.—Timely attention must be given to thinning and disbudding if there is any probability of the growths becoming crowded, of being of primary importance in fruit culture that the growths have full exposure to light and air so as to insure a thoroughly solidified growth. Stop shoots which it is considered desirable to form into spurs, from which the second crop of fruit will be obtained at the fourth or fifth leaf. Syringe the trees twice a day, and keep the mulching constantly moistened with diluted liquid manure, and in a tepid state.

Pot young trees intended for early forcing next season, and place them in bottom heat. Shade lightly from bright sun for a few days, or until they have taken to the new soil, when they may be fully exposed to light and every means taken to insure a sturdy short-jointed growth.

PEACHES AND NECTARINES.—Earliest Trees and House.—Disbudding having been completed it will be necessary to heal in the shoots from the base so as to give them the desired direction they are to occupy on the trellis; but after this they can be allowed to grow until a general tying down of the shoots can be made. Avoid overcrowding, not leaving more shoots than will be necessary for furnishing the trees with wood for next year's fruiting. Keep all shoots retained to attract the sap to the fruit stopped in the first instance at the third leaf or joint, and afterwards keep them closely pinched to one or two joints of fresh growth. The fruits must be finally thinned, as it is a mistake to defer this until the stoning is completed, and about one fruit to every square foot of trellis covered by the trees ought to be retained, though a few more may be left to supply any losses after the stoning is completed. The night temperature should be kept steady at 60° on mild nights, and a few degrees less on cold nights is safer; 60° to 65° by day artificially, and 10° to 15° rise from sun heat, closing at 75° early, and allowing an advance to 80°. Syringe twice a day, but if the trees do not become dry before nightfall the afternoon syringing must be omitted, or it should be done earlier. Turn off the heat early on fine mornings, as a strong heat in the pipes will only necessitate more ventilation, and this will increase evaporation and dry the atmosphere, causing a rapid spread of red spider. Supply the inside borders with tepid weak liquid manure, and keep the surface mulched and constantly moist in order to encourage surface roots. Admit a little air early, increasing it with the sun's heat, but avoid admitting cold air.

Second Early House.—Trees started early in the year have had the disbudding completed and the shoots at the base of the current bearing shoots heeled in to provide an equal spread of future bearing growths over the trellis. Thin the fruits, leaving the best placed for receiving light and air. Stop all growths not required for extension or for furnishing next year's bearing wood at the third joint. Syringe morning and afternoon to keep red spider in check; and see that the inside borders do not lack moisture. Keep the night temperature at 55° to 60°, and 60° to 65° by day artificially, ventilating from 65°, and increasing with the solar heat, but keeping it through the day from sun heat at 70° to 75°, closing at 75° with plenty of moisture in the atmosphere.

House Started Early in February.—The trees having set their fruits syringing should be resorted to to cleanse them of the remnants of the blossoms, and when the fruits are swelling commence removing the smallest and worst placed, especially those on the under side of the trellis. The thinning should be done gradually and on the weakest growths first, thinning more severely on those than the stronger growths. This will tend to equalise the growth, which is of consequence in a judiciously managed Peach tree. Disbudding should be done gradually, commencing at the extremities and strongest growths first; and whilst being careful to retain a growth from as near the base of the current bearing shoots for future bearing, or to supplant those now carrying fruit, no more growths should be retained than will have space for development and full exposure for the foliage to light and air. It will be necessary to retain a shoot on a level with or above the fruit to attract the sap to the fruit, stopping it at the third joint of growth. Leave growths on extensions at

18 inches distance apart, and the other shoots on these may be pinched so as to form spurs, which, however strong the wood, usually develop plump buds and set the blossoms well. Shoots intended for forming extensions must not be laid in closer than 15 to 18 inches apart, as it is essential to success that the foliage have plenty of room for the solidification of the growths, and to insure its being kept clean and healthful. The night temperature be kept at 55°, falling a few degrees, or to 50° on cold nights, 55° to 60° by day artificially, 65° to 70° from sun heat, and a free circulation of air.

Houses with Trees in Blossom.—The syringing ought to be discontinued in these, a good moisture, however, being maintained by damping available surfaces in the morning and afternoon. Shake the trees by rapping the trellis so as to distribute the pollen in the middle of the day and after ventilation has been on some time, or lightly brush the blossoms with a plume of Pampas Grass or feather. Turn on the heat early, and keep it through the day at 50°, with a little ventilation constantly even in cold weather; do not allow the temperature to exceed 65° without full ventilation. It will suffice if the night temperature be kept at 40° to 45°. See that the inside borders are sufficiently moist.

Late Houses.—Give the inside border a thorough soaking with tepid water. Damp the borders, &c., occasionally to insure a genial condition of the atmosphere, and ventilate freely when the weather is favourable. Only employ fire heat at night to exclude frost, and give only a slight heat in the pipes in the daytime to prevent a stagnation of the atmosphere on dull cold days, not exceeding 50°, and not that without ventilation back and front. Nothing is gained by seeking to retard the blossom after it is advanced for expansion. It must have heat to insure its development.

PLANT HOUSES.

Marantas.—To grow these plants well they should be repotted annually, and the present is the most suitable time, so that they will become established before the sun has too much power. After turning them out of their pots a good portion of the old soil may be removed carefully from amongst their roots and the plants repotted in a compost of fibry loam and peat in equal proportions, to which has been added one-seventh of charcoal and a liberal dash of coarse sand. The pots in which they are to be placed must be liberally drained, as abundant supplies of water are required during the season of growth. The soil should be pressed firmly into the pots, and the plants afterwards given bottom heat until growth has commenced. They will start freely and quickly if the bottom heat can be kept at about 80°, and the heat of the structure in which they are placed from 65° to 70° at night. Shade them from strong sun, and syringe freely in preference to watering them at their roots. To avoid this the surface of the soil and pot should be covered with the plunging material, which will prevent evaporation and also hasten root-growth.

Alocasias.—To have well-developed plants with fine foliage as early in the season as possible no time should be lost in giving a top-dressing, or repotting these plants and pushing them into growth afterwards as rapidly as possible. By subjecting them to the latter operation annually their stems can be lowered in the pots, and the plants will soon form roots upon the surface in large numbers, and produce finer and larger leaves in consequence. To allow of this being done it is necessary in many instances to remove a portion of the lower part of the stem, which can be cut into lengths for the purpose of increasing the stock. The pots employed for these plants should be at least one-third filled with drainage, for they are not deep-rooting, but require liberal supplies of water during growth. The old compost must be carefully removed from amongst their roots, fibry peat with living sphagnum moss supplied (one-third of the latter), and lumps of charcoal freely intermixed as the potting proceeds. The plants can be well elevated above the rim of the pots, and the surface covered with sphagnum moss. After potting they should be placed in a warm moist atmosphere, and will do well in the same high temperature advised for Marantas.

Anthuriums.—To retain these beautiful plants in health the soil should never become sour about their roots. Every second year the old compost must be removed, and fresh worked carefully amongst their roots. The pans or pots in which they are to be placed should be nearly half filled with drainage, and the crowns of the plants lowered into the compost as much as possible, for they will form a good length of stem above the surface in the space of two years. A suitable compost for these plants is peat fibre, from which the small particles have been removed, and sphagnum moss in about equal proportions, with charcoal freely intermixed. The plants must be well elevated above the rim of the pot or pan in which they are placed. Another batch of *A. Scherzerianum* may be introduced into the stove from the house in which they have been resting. These will not be ready for potting for some weeks, but may be operated upon directly the roots commence activity, which will soon be the case in stove heat. If necessary to increase the number of plants the crowns where they have divided may be separated and potted singly at this season of the year with safety.

Cyanophyllum magnificum.—This and *Sphærogyne latifolia* are two of the best ornamental foliage plants that can be grown for the stove. Young plants if rooted as advised in autumn, and wintered in 3-inch pots, should now be placed into others 3 inches larger. These plants will require liberal root space, and must be repotted from time to time. To have them in the best condition they should be propagated in autumn or early in the spring, and afterwards grown rapidly in a warm moist atmosphere. Strong light or sun soon browns the edge of their young leaves, and if their culture is attempted in a dry atmosphere they soon become a prey to thrips. Plants that have become bare may have the lead removed, and side shoots will soon be produced, which root freely if

taken off when about 4 inches in length, inserted in sandy soil, and kept under a bellglass or in the close propagating frame. A suitable compost for these plants is two parts peat to one part of fibry loam, and a liberal quantity of coarse sand.

Acalyphas.—These are very useful decorative foliage plants in from 3 to 6-inch pots, and a batch according to the demand should be rooted at intervals of about a month. In stove heat they soon grow tall and thin, and a system of re-striking them frequently is the only means by which handsome well-furnished specimens can be maintained. Good well-coloured heads may be taken and rooted in the former size, and if confined in them their lower leaves will droop and almost hide their pots. If the heads are kept close and moist they will not lose a leaf, but will form roots as freely and quickly as *Coleuses*. To have the foliage well coloured the plants must be freely exposed to light.

THE BEE-KEEPER.

THE NATIONAL BRITISH BEE-KEEPERS' UNION.

As the promoters of the above proposed Union invite criticism on proposed articles of constitution, I hope bee-keepers will take the matter in hand when they have the opportunity of doing something to better their condition as bee-keepers by constituting among themselves a society such as has been proposed. As it is easier to find fault than to show what is right, I must refrain from criticising, but I would strongly advise the promoters to keep clear of trade interests of every kind. I do not observe anything in the proposed rules for the disposal of accumulated funds. Might it not be advisable to have in connection with the above Society a sort of insurance fund to assist persons to start bee-keeping, or to help to make good the losses to its poorer members through foul brood or any other casualty?

At the proposed honey fairs the Honey Company could, along with other merchants, join in the general effort to improve the market. There are many ways honey could be brought under the direct notice of the million, but it is certain that the more widely it is distributed the greater will the sales be. Honey fairs are of old date throughout Scotland, and met with fair success. Fifty years ago fairs were held in conjunction with flower shows, and the honey was often the centre of attraction. But it was the case then, as it is yet, people went to see and not to buy, so the whole was consigned to the merchants. This system has always given satisfaction, the supply and demand regulating the price; and generally speaking, there never has been any difficulty in Scotland to obtain a market. It may be different, however, in some districts where there is a large quantity of honey far from a market town and with indifferent means of conveyance; to those so situated the proposed Union must be a decided advantage.

There is but one other point I wish to mention—viz., that the promoters should either have small circulars printed or a heading on note paper setting forth the objects of the Society, and supply persons with these who would be willing to distribute them in their correspondence. This plan would be doubly effective in enlisting members and securing readers of bee matter at the same time, but if the matter is brought prominently under the notice of all associations the desired end would be accomplished.

WHICH ARE THE BEST HIVES?

Mr. W. Kruse (page 181) must have caused many advocates of frame hives to smile when they read his remarks. Who would have thought after so much had been written in favour of modern bee-keeping that anyone would advocate the brimstone pit? I quite agree with what is said about the cruelty of smoking bees, not speaking of the risk of killing or causing the deposition of the bee (which I have often witnessed) through smoke. I am certain that it is more humane to kill bees by brimstone than smoking them or confining them to their hive during shows, continuing sometimes for a week. I am not sure either that driving, especially as it is sometimes performed, is not more cruel than suffocating by the fumes of brimstone. Some ridicule the suffocation of bees, and yet tell us that they only live six weeks. They set aside hives as stock, believing, as is the case, that the bees will survive the winter and live far into spring if well found in stores; more than Mr. Kruse is of the opinion that under these circumstances it is better to smother the bees at once.

During last autumn all my hives were so strong in bees that it would have been folly to have doubled any one of them, and at the present moment some of them are full, having myriads of young bees as well as drones. These bees, however, are those that have given so much satisfaction the last seven years—viz., the crossed Cyprians. Your correspondent "P. H. P." says "there is nothing to be gained by having a lot of broods hatched out in the cold spring weather." Will he tell us how that can be prevented without being

compelled to prevent breeding by keeping nuclei or weak hives as stocks only, and which by so doing would put an end to any harvest of honey? We must keep our hives strong throughout the year and prevent their dwindling at all times, and if we do this they will commence breeding soon after the shortest day in spite of our wishes to the contrary. I have often warned people against feeding bees if it can be avoided, knowing that it is as unnecessary as it is injurious. If bee-keepers would keep that in mind, and do away with that word "stimulate," their bees would pay them better. No further proof is required for my argument if bees commence breeding as they do at the coldest time of the year they will not suspend it as the year advances. I have but one objection to bees breeding very early—if the weather becomes cold during April and the hives get a back set the queen is liable to be deposed, at a time, too, when the young one is liable to miss fertilisation. If the old queen is not deposed we cannot get our swarms early enough. I have no doubt, however, but these Cyprian crosses will give better satisfaction in the south, where the season is earlier than here; be that as it may, they are the most assiduous bees I ever possessed.

Returning to Mr. Kruse's last paragraph, he says, "for even if we lose a stock occasionally in the winter," &c. There is no necessity for losing a single stock as suggested by him. The fact is, the old-fashioned straw hive with its straw hackle and its floorboard thoroughly protected from the wet, has never been surpassed for wintering by any modern hive. Last year I took the evidence of upwards of fifty bee-keepers with about thirty years' experience; some of them had sixty, and not one of them had lost a hive during winter. This number would represent about 10,000 hives. This is certainly good evidence as a plea that the straw hivist has not lost everything. If anything at all, I do not advise bee-keepers to adopt straw hives wholly, but advise them to avoid extremes. There is both pleasure and profit in straw hives as well as others. I have had experience with all kinds. I again remind all that stimulation and manipulations often cause failure. If bees were managed as they should be and joined at the proper time the brimstone pit would be unnecessary, except in those cases where swarming was not controlled, and then I say with Mr. Kruse, the brimstone pit is the most profitable, as well as the most merciful, way of dealing with them.—A LANARKSHIRE BEE-KEEPER.

STRAW HIVES—SWARMS VERSUS EKES OR NADIRS.

A few weeks ago I asked you a question raising discussion as to a way of swarming then proposed by me. I again desire information, and think that it may be of use to others besides myself. Let me state the case:—

I have two Pettigrew skeps 20 by 12 and 16 by 12 respectively. To-day on examination I find the first three parts full of comb, and the second only half full. In the autumn (September) there was in the first 10 lbs. of bees and in the latter 6 lbs., and both are now decidedly strong in number and seem in good and healthy condition and the combs clean and dry. 1, Is this shortness of comb any detriment to them? 2, Is it likely to make them late swarmers? 3, Or to induce them to build drone comb only?

My idea is to treat them in the spring towards May (if they are strong enough) to prevent swarming. Mr. A. Pettigrew seems to advocate ekes or nadirs for this purpose, and in my case I think nadirs most suitable, as by nadiring them the swarming impulse would be taken away and the nadir would in the course of the summer (weather allowing) be filled with broken comb only. I could then take the top hive for honey, and I may say that I can get as much for run honey as for comb honey in section, and Mr. A. Pettigrew states that in that case ekes or nadirs produce a far larger yield of profit than supers. Increase of stock I care nothing about.

What is your opinion on these ideas? Please give me an answer in an early issue.—FELIX.

[If "Felix" carries out his ideas there is a risk of losing his hives as stocks for next season. There are two things of great importance in the management of hives (either on the swarming or the non-swarming principle) which the bee-keeper should keep in view. One is to have only strong hives, and the other is to create in the height of the season stocks possessing young queens for the ensuing year, and, if possible, to have the right proportion of worker combs, of which the hive is better to be full. Regarding ekes or nadirs—the former is simply an eke underneath for the uninterrupted extension of the combs, and the latter is a box or hive placed underneath the stock, from which the bees descend and start combs upon the ceiling of the former, which may be separated without cutting. The top one containing the most honey can be taken, and the under one with all the bees and comb kept as a stock if it has worker combs, which is very doubtful; drone comb is commonly the result of such manipulations unless a young queen has superseded the old one at the time of enlarging. Supers are at all times preferable to nadirs, because it is more satisfactory to have drone comb filled with honey in a super than having it made in a nadir unfilled, except with drone brood, which in such cases there would be an excess of drones injurious to the well-being of the hive. Although the honey is stored in supers it is not necessary it should be kept there if dripped honey is desired. In fact, honey should be dripped from no other than "virgin" comb. All honey dripped from combs that has been bred in is tainted. Honey cannot be improved, but

there are many ways of spoiling it. Enlarging a hive does not prevent swarming if the old queen shows signs of failing to fulfil her matronly duties, and when young queens are brought forward nothing but removing the supernumerary queens will check the impulse to swarm. Supers are therefore most desirable under any system of management, and honey in the comb is always more luscious and enticing than that dripped or extracted. Mr. Pettigrew's greatest experience with ekes was at the moors, and it is presumably when hives are there that he advocates their use. Bees in straw hives at the heather make more weight with ekes than supers. "Felix" does not say how long the honey season lasts in his locality. If, however, it lasts only for about a month with his hives rather late, it will be advisable to prevent swarming, but if it continues till September then hurry on swarming by all means. The right system of management depends more on how to have bees prepared to take the advantage of the season and flowers than any particular hive or any one pet system. Now to his questions. 1, A little feeding as soon as the combs are covered with bees will hasten it much, and might even be the first to swarm in the district. 2, No, if the bees are numerous and attend to feed in time. 3, There is a danger of much drone comb being built, but will be lessened if comb-building is encouraged early. In large hives the queens are often deposed the first summer after creation, but if swarmed artificially in time they may be spared longer, as a first swarm fills up its hive quick with honey, the strain is not so great on the queen, and she is allowed to reign in peace.]

THE BRITISH HONEY COMPANY AND THE BRITISH BEE KEEPERS' ASSOCIATION.

YOUR correspondent "Pro Bono Publico" (see page 202) makes some comments upon my article, page 181, which he thinks necessary, but like his other friends, seems either unwilling or unable to give the desired information. In the first place, then, let me tell him that the British Bee-keepers' Association is not a national institution any more than the Honey Company is, or is likely to be. In regard to my knowledge of the British Bee-keepers' Association, I assisted at its formation, and was a member for a short time. I am quite cognisant of all your correspondent says the British Bee-keepers' Association has done, which, to a casual observer, must appear as so much good, but I also know there is a great deal of discontent amongst its members.

It is a pity your correspondent does not enlighten us upon the expense bee-keepers in Ireland and other places have been induced to indulge in by the British Bee-keepers' Association's experts recommending apiarian appliances of a costly nature.

In regard to the British Bee-keepers' Association attempting to cross the border to offer assistance, I may tell him, and all concerned in that project, that it is unnecessary. The humblest bee-keeper in Scotland (except those beginners who have given themselves up to the British Bee-keepers' Association) is quite capable of managing his bees and finding a market for his honey. From time immemorial the Scotch have had their local societies, with means of assisting each other for the disposal of honey, and machines for extracting, as well as vehicles for transporting their bees from one place to another, and mutually assisting each other in all the requirements of bee-keeping. The shows, too, were conducted on principles of equity and judgment, and the awards made always gave satisfaction.

Evidence has been given by your correspondents that the Honey Company has unlimited powers to deal in every kind of honey to be put up for sale in "proper bottles and labels" for the purpose of making it a paying concern. The only advantage likely to accrue from this is stated by "Pro Bono Publico" in my words; but there is scarcely a shop in any town of importance but what has American honey as well as glucose for sale. No company was required to establish this system, for a private individual with enterprise accomplished long ago what the Honey Company can only accomplish at "great cost," not speaking of the "profits" they expect. It requires but little calculation to show that all the expenses incurred and profits made must necessarily fall on either the consumer or producer, which will at a low calculation be from 30 to 40 per cent. Such middlemen as the Honey Company are those who reap the profits of fruit, vegetables, beef, dairy produce, &c., and now it is to be honey, which will make bee-keeping unremunerative to the bee-keeper, as has been the case with the market gardener, fruit-grower, and farmer, who, in the absence of a proper union (such as is proposed by "A Hallamshire Bee-keeper") have been victimised by the grasping middlemen. This is what the promoters of the National Bee-keepers' Union wish to see avoided, and bee-keepers by studying their interests will be wise to take advantage of and give all assistance they can. Beyond what I have said about the British Bee-keepers' Association and Honey Company, I have no desire to further interfere with them, but will exert myself to support any scheme for the public good, without any desire for personal profit.—A LANARKSHIRE BEE-KEEPER.

I OBSERVE that "A Hallamshire Bee-keeper" sees a very close connection between these and the *Bee Journal*, and suggests that they have interests to serve antagonistic to those of bee-keepers. As this suggestion is utterly incorrect, I crave permission to state that there is no connection whatever between the Honey Company and the British Bee-keepers' Association. It is the case that some of the Committee of the British Bee-keepers' Association are Directors of the Honey Company, but the two concerns are entirely distinct, and are not, like your papers, worked from the same office. A similar remark applies also to the *Bee Journal*. The *Bee Journal* is the organ of the British Bee-keepers'

Association, but the management is quite distinct, and the British Bee-keepers' Association is not responsible in any way for the *Bee Journal*. The Honey Company has been started to promote the sale of honey, and that object seems to me a very laudable one.—E. M. B. A.

WHICH ARE THE BEST HIVES—BAR-FRAMES OR SKEPS?

I HAVE assisted in the management of bees from my boyhood with the exception of two short breaks, when I lived where bees were not kept, but it was always on the old system of straw hives or skeps until the last few years. When bar-hives became the fashion we had to follow in and I have no doubt for providing good super honey in the comb fit for table they are the best. But they take up more of my time during the summer than I can afford to give them; yet I am forced to do it, for if the well attended I think bees are less profitable in the bar-frames than the skeps. When first we had them I thought the bar-frames far ahead of the skep, but for the last two or three years I have cautioned poor people who have intended giving up the skep for the bar-hive not to be too hasty, as I have an idea that skeps are the best when we take into consideration the great outlay for bar-hives and other necessaries (that the skep do not require), and then the constant attention needed there must be a much greater quantity of honey to be able to pay for this extra expense and time. I do not keep bees myself, as I have to look after my employer's; if I could I should try the two systems together. The great quantity of honey gathered by the bar-frame hives last year gained for them a little more favour, but I had no skeps to compare them with.

I cannot hold with Mr. Kruse in his reverting to the old system of killing bees, which must lower the value of skeps very much. I do not think that smoke, judiciously used, does any harm to bees; but when bees are half suffocated by heavy doses of smoke harm is done. Only two or three puffs with the smoker is sufficient to make them gorge themselves with honey. Instead of killing them I should drive them about the end of July, but the precise time would depend on the season and locality. It should be done soon enough for them to get sufficient to winter on, if not they must be fed. By so doing I have had as good stocks in spring as from May swarms untouched.—J. L. B.

THE BRITISH BEE-KEEPERS' ASSOCIATION AND MR. PEEL.

MAY I suggest that it is hardly fair to allow "A Hallamshire Bee-keeper" to allude to Mr. Peel in the way he has done without signing his name? It is perfectly true that malicious criticisms and personal attacks are excluded from the *Bee Journal*, and properly so; but there is no question whatever that the *Bee Journal* admits views of all kinds and from all quarters, provided only that they are expressed in tolerable English and free from personalities. Under Mr. Peel the *Bee Journal* for some years has been published once a fortnight, whereas formerly it was issued once only in the month. Its circulation, moreover, has largely increased, and the most advanced bee-keepers from all parts of the globe enrich its pages. The compliments paid to its proprietor (Mr. Peel) are only his due, for he has done more to advance bee-keeping in England than any Englishman living; and the extraordinary advance of apiculture in England during the last five years must be attributed chiefly to Mr. Peel and the band of friends whom he has attracted to himself by his ability, energy, earnestness, and philanthropic desire to do good to his fellow countrymen. Mr. Peel has made a mark for good on his time, and in my opinion deserves the gratitude and esteem of all right-minded men.—A LOOKER-ON.

[With reference to signatures we are authorised by "Hallamshire Bee-keeper" to say that he has no objection to sign his communications with his own name provided all who have taken part in this discussion will do the same.]

TRADE CATALOGUES RECEIVED.

H. Cannell & Sons, Swanley, Kent.—*The Whole Family of Chrysanthemums (illustrated)*.

L. Delaville, 2, Quai de la Mégisserie, Paris.—*General Catalogue of Seeds*.

W. E. Ward & Co., Union Chambers, 7, Wormwood Street, London, E.C.—*Catalogue of Horticultural Sundries*.

James Phillips & Co., 6 and 7, Half Moon Street, Bishopsgate Street Without, London.—*Price List of Glass for Horticultural Purposes, Fern Cases, Shades, &c.*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspon-

dents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

The Leeds Gardeners' Benefit Society (A Lincolnshire Gardener).—Any gardener of the proper age and in good health is eligible for membership in this useful Society. You had better write to Mr. W. Sunley, gardener, Bacchus Hill, Moor Allerton, Leeds, who will supply you with all requisite information on the subject.

Adding to Vine Border (D. G. M.).—The Vine border is too deep by half, but that does not appear to be your fault, and you must do the best you can under the circumstances. Take particular care that the drainage is in good order, and that there is provision for the free outflow of superfluous water. You may add another section to the border now, but before doing so take down the face of the existing border until you come to roots plentifully, and if you cut off the ends of some of them smoothly you will do no harm, but good, as there will be ample left for well supporting the Vines till new roots form, and the pruning will result in a multiplicity of fibres. In all probability you will act wisely to take from 1 to 2 feet from the existing border, so that the new soil is placed in direct contact with the roots. This must be in good condition—not too wet, so that it can be made firm with safety—to avoid settling and falling from the old border, dragging the roots with it. Remove at the same time a little of the soil from the surface of the border, adding fresh, and if the roots are inside give a good watering with tepid water unless the soil is sufficiently—that is, decidedly moist.

Gardenia Buds Falling (D. J. F.).—We cannot publish your letter, which would have to be re-written to render the matter suitable for insertion. Will you take a hint, kindly given and for your own benefit, as to the desirability of your improving yourself at least in spelling? It is generally a great mistake to repot plants directly they arrive from a nursery. The check they receive in transit, with a change of temperature and atmospheric conditions to which they are often subjected, is quite sufficient at once without any further disturbance. Had the plants been kept in the pots in which they arrived, in a stove, and sufficiently yet judiciously watered, the buds would have been much less liable to fall than after repotting in the autumn. Defective root-action is a common cause of the collapse of the buds, and after repotting one mistake in watering would prevent the roots taking freely to the new soil, and the buds would then fall. With great care in watering the buds now forming will in all probability develop into satisfactory flowers—that is, if the plants are clean and healthy.

Dividing Dahlias—Disbudding Vines (F. J.).—You will do right by dividing the roots when the young shoots are an inch or two long, securing one shoot with each division, and reducing the tubers for convenience of potting in 5-inch pots. With the aid of a brisk hotbed or propagating pit each shoot is taken as a cutting and rooted; but presumably you have not such convenience, and therefore dividing the roots would be the safer plan. In potting you may remove the very large tubers, as the smaller will support the growths till new roots are produced, while some of the former if potted might push growth from the apex and form plants. Let the eyes on the Vine rods push, and gradually remove the weaker at intervals of a day or two until only the best and best placed remain for extension into laterals. The disbudding should be completed when you are certain the growths relied on are safe from accidental breakage by tying them to the laterals, and not before.

Seedling Polyanthus (A. A. E.).—Provided your seedlings are superior and distinct from existing named varieties you will be quite justified in attaching to them such names as you consider appropriate; but before doing so it would be advisable to submit flowers to a good florist and ask for his advice on the question. In reply to your other inquiry, Mr. William Dean of Walsall is "a florist who makes Pansies and Violas a speciality" in your district, and if you were to send him some Polyanthus flowers with stamps for a reply he would perhaps forward you his opinion on their merits, and if this is favourable you might then exhibit them at the Birmingham Spring Show, and also at the National Auricula Show in London where Primulas are staged and examined by competent judges.

Damp Conservatory (M. C. B.).—Imperfect ventilation, a low temperature, and overwatering are the causes of the mildew and damping off among the plants of your conservatory. A temperature of 50° by fire heat, or higher by sun heat, opening the roof sashes early and regularly on fine days, and careful attention to watering, will soon set matters right at this season of the year. On wet or windy days do not open the ventilators, but insure circulation of the air by gentle fire heat. Your proposal to apply liquid manure to young climbers to induce them to bear flowers is wrong. It is probably owing to excessive vigour that they have been flowerless hitherto; as the growth spreads it will become less rampant, and then you will have flowers. It is the want of light and a low temperature which causes the young growth of the *Lantana* to be discoloured, spotted, and withered. Remove it and the *Raphis flabelliformis*, which is also suffering from lowness of temperature, to a warm house where the temperature ranges from 50° upwards, till the season's growth is fully developed, and then use them again for the decoration of rooms or cool houses.

Pruning Young Gooseberry and Currant Bushes (J. W., Pershore).—Any of the Gooseberry shoots resting upon or within an inch or two of the soil must be cut off; the end of shoots turning downwards should also be pruned where the downward curve begins at a bud pointing upwards or outwards. If the growths are crowded thin them out to 6 or more inches apart. The length of wood left upon vigorous young bushes is about a foot. The sorts mentioned have the merit of producing large fruit, but not of superior flavour. Here are a few which have small but highly flavoured fruit—Ironmonger, Red Warrington, Pitmaston Green Gage, Yellow Champagne, Jenny Jones, Mayor of Oldham. Currant shoots must be shortened

to the same length as the Gooseberries. The name of your plant is *Jasminum nudiflorum*.

Peaches Falling (Stirling).—We have very little doubt that the falling of the fruits, such as you have sent, is the result of defective fertilisation. Either the weather was so dull at the time the trees flowered that the pollen was not liberated and diffused, or there was a natural deficiency of pollen, which is not unusual with some varieties. In the case of early forced trees it is highly desirable to assist the fertilisation of the flowers, first by maintaining a rather dry and buoyant atmosphere, then brushing them lightly over with a very soft brush. A bunch of soft feathers secured to a stick will do very well, or a soft plume of Pampas Grass. This should be used towards the middle of the forenoon, or when the pollen is dry, drawing the brushes first over those blossoms where the farina is plentiful, following with the others immediately. With healthy trees having the wood well ripened, and even moderately favourable weather, that practice rarely fails with us, the trees being brushed over every day for a week, as sometimes the earliest, and at other times the latest, flowers are in the best condition for effective fertilisation.

Manures for Plants in Pots (A. G.).—You appear to be one of those individuals who think that manures can do everything, but the fact should never be forgotten that more depends on the attentive care and skill of the cultivator than on the manures themselves. We could name a dozen men who can and do "grow Primulas, Calceolarias, Cinerarias, and keep the foliage on Chrysanthemums" far better without any artificial manure whatever than another dozen we could also name do with a full supply of every kind of manure they desire at their disposal. When a person requests us to state "how much manure each plant requires at a time and how often" he simply indicates that he has much to learn in even the rudiments of plant culture. A person may just as well ask how much food he should give to his family without indicating whether they are infants or adults. Such questions are unanswerable. We published an article on page 106, the issue of February 5th of the present year, in which three kinds of manures are recommended, their proportions given, and the quantity for use generally indicated. We know that the mixture is good, but only when applied with judgment, otherwise it may be of no use at all; and it most certainly cannot counterbalance the evils that result from defective watering, soil, ventilation, and faulty management generally. We may further add if a person cannot grow plants well with good soil at his disposal and a supply of bonemeal and soot for those that need such assistance, he is not likely to excel with anything; but when he has learned to grow them well with the aid of simple materials he may grow them better with the assistance of other ingredients, as he will then have a pretty good idea how to apply them effectively. As to hardwooded plants, there are numbers to which manure would be decidedly injurious, while others much root-bound might be benefited by light top-dressings of bonemeal and perfectly clear pale soot water.

Names of Plants (Town Gardener).—Both the *Crotons* appear to be *C. Disraeli*, differing in the colouring, which varies considerably, as well as the lobing of the leaves. Large specimens often continue in the same character as the cuttings from which they were raised. Thus, if a cutting is very deficient in colour it often requires a long time to grow out of it, and sometimes it never does colour so well as others obtained from more highly coloured shoots. The *Dracena* is too deficient in colour to be readily determined, but it resembles *D. rubra*. (*G. A. M.*)—1, We do not undertake to name varieties of *Camellias*; 2, *Anemone (Hepatica) triloba*; 3, *Begonia Ingrami*; 4 was too withered to be recognised. (*R. J.*)—We have many times stated that we cannot undertake to name flowering plants without flowers, yet you send us a scrap of one that you say is flowering now and still refrain from sending the essential part. Further, our rule is not to name more than six at one time and you have sent eleven, not one of them being numbered. We will name a few of them, but in future you must send flowering portions with numbers attached to them, and if these are written outside the paper ligatures so much the better, as the damp packing destroys the paper in transit and it melts away during the process of untying. The yellow flowering hardy plant is *Eranthis hyemalis*; the fruiting plant, *Fuchsia procumbens*; the greenhouse twiner, *Myrsiphyllum asparagoides*; the blue-flowered trailing plant, *Convolvulus mauritanicus*. It is useless attempting to name more without numbers for identification.

COVENT GARDEN MARKET.—MARCH 11 TH

BUSINESS comparatively stagnant. Prices unaltered.

FRUIT.

	s. d.	s. d.	s. d.	s. d.
Apples	½ sieve	2 6 to 4 6	Oranges	100 4 0 to 7 0
Chestnuts	bushel	16 0 0 0	Peaches	per doz. 0 0 0 0
Cobs, Kent	per 100 lbs.	55 0 0 0	Pears, kitchen ..	dozen 1 0 3 0
Currants, Red ..	½ sieve	0 0 0 0	„ dessert	dozen 2 0 6 0
„ Black	½ sieve	0 0 0 0	Pine Apples English	.. lb. 1 6 2 0
Figs	dozen	0 0 0 0	Plums	½ sieve 0 0 0 0
Grapes .. .. .	.. lb.	3 0 6 0	Strawberries ..	.. lb. 0 0 0 0
Lemons .. .. .	.. case	10 0 15 0	St. Michael Pines	.. each 3 0 7 0

VEGETABLES.

	s. d.	s. d.	s. d.	s. d.
Artichokes	dozen	2 0 to 4 0	Lettuce	dozen 1 0 to 1 6
Asparagus	bundle	7 0 8	Mushrooms	punnet 0 0 1 6
Beans, Kidney ..	100	2 0 2 6	Mustard and Cress	punnet 0 2 0 4
Beet, Red	dozen	1 0 2 0	Onions	bunch 0 3 0 0
Broccoli	bundle	0 9 1 0	Parsley	dozen bunches 2 0 3 0
Brussels Sprouts	.. ½ sieve	2 6 3 0	Parsnips	dozen 1 0 2 0
Cabbage	dozen	0 0 1 0	Potatoes .. .. .	.. cwt. 4 0 5 0
Capsicums	100	1 6 2 0	„ Kidney .. ..	.. cwt. 4 0 5 0
Carrots .. .. .	.. bunch	0 3 0 4	Rhubarb .. .. .	.. bundle 0 4 0 0
Cauliflowers ..	dozen	2 0 3 0	Salsafy .. .. .	.. bundle 1 0 0 0
Celery	bundle	1 6 2 0	Scorzoneria .. ..	.. bundle 1 6 0 6
Coleworts	dcz. bunches	2 0 4 0	Seakale	per basket 1 0 1 0
Cucumbers	each	0 6 1 0	Shallots .. .. .	.. lb. 0 3 0 0
Endive	dozen	1 0 2 0	Spinach .. .. .	.. brshel 2 0 4 0
Herbs	bunch	0 2 0 0	Tomatoes .. ..	.. lb. 1 0 2 0
Leeks	bunch	0 3 0 4	Turnips .. .. .	.. bunch 0 4 0 6



PERMANENT PASTURES.

AFTER the fine weather of last autumn, which was so favourable for land tillage, it is reasonable to suppose that the soil of farms generally is cleaner now than it has been for several years past, and therefore the present time may be regarded as unusually favourable for laying down land to permanent pasture, to do which well it is of primary importance that the soil is as free from noxious weeds as it is possible to make it, that it is well drained, and that it is sufficiently fertile to insure a quick strong growth of the plants this season. If either of these important or rather indispensable factors to success is wanting, better, far better, will it be to wait till that want is supplied than to run the risk of entire or half failure which is inevitable without it. Most farmers sow with a corn crop, and as autumn-sown corn has now had its spring dressing of artificial manure, the grass seed should be sown now as soon as the surface of the soil is dry enough. Sowing with a corn crop is done in order that some return may be got from the land to cover or help to cover the expense of laying it down to grass, but the wisdom of this policy is certainly questionable on thin poor soil; rather should we impart fertility to it specially for the grass, than exhaust it with a corn crop, and either leave the young grass poverty-stricken and weakly, or apply manure to it after the harvesting of the corn.

Land cleaned quickly after harvest last autumn was at once sown with a catch crop of White Mustard, and the weather continued mild and favourable to growth so late in the year that we got a fair plant, upon which teg sheep were folded. Ploughing followed the folding closely, and the land is now in stale furrow, free from weeds and in perfect readiness for sowing. That crop of Mustard was a very speculative one; to sow it at all might be thought a rash proceeding, but we live in a southern county, and the result is our justification. We got the land clean, and knew that it was poor, an expenditure of 7s. 6d. per acre for Mustard seed might afford a useful supply of food for the tegs, and enable us to impart the requisite degree of fertility to the soil without the expenditure of a much higher sum per acre involved in the use of artificial manure; it did so, and the retrospect of that work is certainly not unsatisfactory.

Land that is now clean but poor may have a dressing of artificial manure, and be sown at once, or the grass seed may be sown with Mustard upon which lambs would have to be folded, and have in addition a liberal diet of crushed corn and meal, or Mustard may be sown alone, left till its flowers are fully expanded, then ploughed in, and the grass seed sown not later than the third week in July. This sowing, with favourable weather, should give us a strong plant in September, upon which lambs should be carefully folded in fine weather only. The folds should be of a suitable size to enable them to eat off the grass in twenty fours, a fresh fold being made every morning. Let the lambs pass over it in this manner once, and then let it remain untouched till the following spring. Before that time arrives we should have come to a decision as to our treatment of the young pasture. Two courses are open to us; we may either apply a dressing of artificial manure and put young stock upon it, or we may avoid the outlay for manure and proceed by careful sheep-folding. Where there is a breeding flock it is well to hold the young grasses in reserve for it, and to begin folding again in spring, paying particular attention to have the size of the folds in correct proportion to the number of ewes, small folds wherein the grass is eaten sufficiently close in twenty-four hours, so that the ewes could be let into a fresh fold every morning, the lambs being let run forward for first bite through lamb gates. Trough-feeding in the folds with chopped hay, Mangolds, crushed Oats and bran is recommended as tending to enrich the manure for the grass, as well as being good for the animals. The process of folding is repeated again and again, in all three times, during the year, either with the tegs or the general flock, waiting long enough each time for the grass to make a fairly strong growth, but taking care to remove the sheep from the new pasture for the winter by the middle, or at the latest, the end of October, according to the state of the weather. Folding with sheep should be done very much in the same way in the following year, and then as autumn draws nigh the excellent condition of the

pasture will afford satisfactory proof of the soundness of our treatment.

Notice particularly that stock are kept off the new pasture in the year of sowing and the two following years, and that sheep are only put upon it in folds, so that all risk is avoided of favourite grasses being eaten too closely, or any of the young growth being eaten too soon. That this plan has the merit of economy, as well as being highly beneficial for the young "seeds," there can be no doubt, for by it all outlay for manure is avoided, and under good management the sheep should pay their way and leave a margin of profit. Far better is it to proceed in this manner than to follow the more common but unsatisfactory plan of turning stock or sheep upon new pasture to graze unchecked upon all that can be eaten, or to mow it and incur a heavy outlay for artificial manures. During the first few years after sowing our aim is to establish turf of the best grasses, and this can only be done by careful systematic treatment. We may undoubtedly form a good pasture without the help of sheep-folding, but it would be more expensive. The popular idea that sheep are hurtful to young grasses is right enough if they are turned out upon them, but folded in the way we have described no harm can possibly happen.

(To be continued.)

WORK ON THE HOME FARM.

Horse and Hand Labour.—We are now close upon the middle of March, and much soil will be in a suitable condition for finishing the sowing of spring Wheat and Peas, and the sowing of Oats, Barley, and spring Tares. The proverbial fickleness of our climate should cause us to be watchful and prompt to take advantage of every opportunity for seed-sowing. Be it our care also to sow upon a clean seed bed, to impart the requisite degree of fertility to the soil, and to sow good seed. Never should we forget that soil is a medium for the absorption and conveyance of food to plants, do not therefore sow upon land known to be wanting in fertility without supplying that want. Artificial manure is cheaper now than it has been for some time; we ought then to sow with the corn enough manure to insure a healthy vigorous growth. Avoid dealers' mixtures; obtain pure manures separately, mix them at the farm, and apply them after corn is sown before the last turn is given with the harrows. Sow of Barley 3 to 4 bushels per acre, Oats 4 to 6 bushels, Peas 3 to 4 bushels, Wheat 2 to 3 bushels, and Tares 3 bushels.

Land that is very foul with Charlock should be sown with White Mustard, 20 lbs. per acre; the Charlock then comes with the Mustard and is ploughed in with it, both coming into flower together. By repeating this process two or three times during the summer most of the Charlock seed lying in the soil touched by the plough is induced to germinate. We thus rid the land of these pests and enrich it with an ample store of fertility for a grain, root, or grass crop. The term used, "these pests," is undoubtedly correct, for Charlock is a common name for two of our most common weeds, *Sinapis arvensis* (Wild Mustard), and *Raphanus Rapastrum* (Wild Radish). Grass seed and Clover for alternate husbandry should be sown with corn now at the rate of about 20 lbs. per acre, or to be more explicit, 4 lbs. Red Clover, 4 lbs. Cow Grass, 2 lbs. each of Alsike, Trefoil, and White Dutch Clover, and a bushel of Rye Grass.

A heavy iron roller should be used upon meadows much poached by the galloping of colts in autumn or from other causes. Let this be done early while the surface is wet enough to yield to pressure, and an extra horse used for the work, to avoid a heavy draught and deep hoof prints. Corn must also be rolled as the surface becomes dry enough, and bush and chain harrows passed over the grass land and seeds reserved for hay. See that grazing enclosures are put in order for the season, hedges cleaned, fences and gates repaired, stones and branches picked, ditches scoured, the mouths of land drains examined. Thistles and Brambles should also be carefully rooted up and destroyed. When this is neglected much grass is wasted and much wool lost.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain
	Barometer at 32 nd and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.	On grass	
1885.										
March.										
Sunday	30.191	35.7	36.2	N.E.	43.0	47.2	32.6	73.0	28.6	—
Monday	30.116	36.8	35.7	E.	41.7	47.2	29.2	69.2	22.6	—
Tuesday	29.718	41.6	39.1	E.	40.6	45.6	34.4	51.8	27.7	0.587
Wednesday ..	29.446	43.8	42.7	W.	41.3	54.7	39.7	83.2	32.3	—
Thursday	29.581	42.4	41.5	S.W.	41.8	53.3	37.2	72.2	31.6	—
Friday	29.273	37.4	35.0	N.	42.1	51.2	35.9	57.1	34.2	0.140
Saturday	30.091	32.8	32.6	N.	40.8	43.8	29.8	68.8	23.4	—
	29.701	38.8	37.7		41.6	49.0	34.1	67.9	23.6	0.727

REMARKS.

- 1st.—Very fine throughout.
 - 2nd.—White frost, dull morning, then fine.
 - 3rd.—Dull morning; very wet day and evening.
 - 4th.—Glorious spring day.
 - 5th.—Generally fine, but slight shower at 5.30 P.M.
 - 6th.—Dull and colder; rain in afternoon and evening.
 - 7th.—White frost and thin ice; fine morning; dull afternoon; foggy evening.
- A variable week, but on the whole about the average temperature.—G. J. SYMONS.



COMING EVENTS

19	TH	Royal Society at 4.30 P.M. Linnean Society at 8 P.M.
20	F	
21	S	
22	SUN	5TH SUNDAY IN LENT.
23	M	
24	TU	Royal Horticultural Society, Fruit and Floral Committees at 11 A.M.
25	W	Royal Botanic Society, Spring Show. Society of Arts at 8 P.M.

DUKE OF BUCCLEUCH GRAPE—GRAPES CRACKING.



SO much has been written for and against this Grape that there is some difficulty in finding words to express ideas that have not already been publicly made known. It is generally admitted that more grievous disappointments have occurred over this one variety than all the other sorts of Grapes that have been sent out during the past quarter of a century. It is also very remarkable that most of the writers upon the Vine in the horticultural press have failed to give a satisfactory report of their success in the cultivation of the "Duke."

Like all other Grapes this one has its peculiarities, and these when understood make it when grown in a suitable house as easy to manage as any other variety. When Mr. Thomson decided upon sending out the Duke I think he made a mistake in recommending it as an early variety that would come in two or three weeks before the Black Hamburgh. As he is such an eminent authority upon everything appertaining to Vine culture almost every Grape-growing gardener got it, myself included, and as a matter of course at once had it either planted or grafted on another Vine in small early vineries—just the house of all others where it ought never to have been placed.

The whole family to which the Duke belongs—namely, its near relative Golden Champion, Muscat Champion, and Cannon Hall Muscat, are totally unsuited for very early or small vineries, hence the many disappointments with those grand and noble-looking Grapes. If anyone takes the trouble to carefully examine the leaves, wood, and pith of these varieties he cannot fail to observe how very different they are in constitution from most other sorts, and in order to properly develope and consolidate the tissues of their gross robust leaves and wood it is absolutely necessary that they have abundance of room, light, and plenty of genial wholesome air during the growing season. In the case of the Duke and Golden Champion such an atmosphere will produce perfectly finished Black Hamburghs that are wanted to be ripe in the early autumn. Such is my experience, and I have grown both sorts ever since they were in the hands of the public. When treated as above described, and the wood perfectly ripened, no fear need be entertained about pruning the laterals close back to the shoulder bud. I find with the Duke, as with many other kinds, the best and most compact bunches spring from the shoulder bud, but in cases where the shoots are imperfectly ripened, and in order that there may be more to choose from, it is advisable to leave two or three buds.

Another fertile source of disappointment in connection with the culture of this Grape is the tendency of its berries to crack and split just at the time when we begin to congratulate ourselves upon having achieved the height of our ambition. The causes of splitting have long been a source of

contention amongst Grape-growers, and much nonsense has been written upon allowing sub-laterals as much play as possible during the ripening period. Ringing, nicking, gimbleting, keeping the atmosphere of the house very dry, &c., are the usual remedies recommended. I have never seen an argument advanced to prove the theory that the evil originates with the roots. If this is so, what good purpose can it serve to hack and mutilate the Vine, or even allow all the sub-laterals to run to an inordinate length? If splitting is caused by the sap being rapidly sent up from the roots, surely some of this would leak out through the apertures. Such, however, is not the case; therefore we must look to other sources for the cause of the ruptures. In my opinion cracking is entirely brought on by sudden changes of atmosphere, such as is caused by closing the house too early in the afternoon and thereby causing a high temperature; then by damping the paths the house is heavily charged with vapour. This soon penetrates through the porous skin of the berries, causes an expansion of the juice or tissues of the flesh, and the skin not being elastic soon gives way; hence the cracking. I have also often observed cracking produced by neglecting to ventilate soon enough after a sudden outburst of sunshine, and more especially after rain or a thunder-storm.

I am not chemist enough to scientifically describe these details, but this much I can say—viz., if anyone cuts a bunch of the Duke, Golden Champion, or Madresfield Court, dips it into hot water and hangs it up to dry, he will soon observe that almost every berry will split. Should his inquisitiveness lead him to further experiments with other fruits, take a few ripe Whitesmith Gooseberries, put them into water, then place them out to dry, and he will soon observe almost every one split. The same remark is applicable to Bigarreau Cherries and Green Gage Plums. Some of the best sorts of Melons and Apples, such as Golden Pippin and Red Astrachan, easily split if put into a close tin box and placed in a hot moist house; therefore it is quite clear splitting is not caused by sap flowing from the roots. With us the Duke has given the most satisfactory returns when grafted upon the Black Hamburgh and grown in a large span-roofed late Hamburgh house. In such a position it is without a doubt the grandest and most noble-looking Grape in cultivation. Three good bunches of the Black Hamburgh topped with one of the Duke make a dish of Grapes fit to "set before a king;" and certainly no Grape that ever goes on to my employer's table has more praise bestowed upon it than the Duke of Buccleuch.—J. McINDOE.

HEATING AND HOT-WATER PIPES.

MANY mistakes are made in heating houses by means of hot water, but whether gardeners or hot-water engineers are to blame for many of the blunders I shall leave an open question. Not unfrequently we find the pipes massed together, while the plants arranged directly over them are baked and dried to such an extent that they are seriously injured, while Peach trees, Vines, Melons, and Cucumbers become a prey to red spider and other insects. One instance of this system must suffice to show the evils that result from it. In a large lofty house with which I am familiar the pipes, six in number, are arranged round the sides of the house and directly below an open trellis of wood, upon which hundreds of small decorative plants are placed while in bloom. The individual that undertook the responsibility of this arrangement had either very little regard for the plants or was sadly deficient in his knowledge of their requirements. The dry heat arising from this number of pipes proves ruinous to Heaths, Epacris, Azaleas, and many other hard as well as soft-wooded plants. Not only are they seriously injured, but the flowers under such conditions do not last more than half their natural time. Every precaution should be taken to distribute as regularly as possible through

the house the number of hot-water pipes employed, for only by this means can a safe and genial heat be maintained.

Another evil, and a very prevalent one, is an insufficiency of piping. This is frequently the result of one of two causes—either from a lack of knowledge of how many pipes are necessary to heat a certain sized structure, or from motives of economy. The latter is the most general cause, and this so-called economy in the end proves quite the reverse. The employment of fewer pipes certainly effects a slight saving in the first outlay, but the extra consumption of fuel necessary to produce the required temperature very soon proves a heavier item than the cost of a few extra pipes. Overheating pipes causes the rapid increase of many insects, and not unfrequently results in serious failures. Sufficient pipes should always be employed, so that a given heat can be maintained during the worst winterly weather without having to resort to a system of overheating them. For the purpose of showing that I have reasonable grounds for condemning the false economy referred to, a case that came under my own observation a few years ago may be given. Two houses situate over 300 feet from the boilers had insufficient piping. In one two extra rows were supplied, and in the other the pipes were raised and re-arranged with slight additions. The result of this outlay was that not only have the occupants of the two houses in question succeeded much better, but the coal bill has been annually reduced by £20.

The chambers in which the mains are arranged are also of importance. In many establishments they are too narrow, and the brickwork has to be pulled down if any repairs are needed. The chambers should be at the least 18 inches in width, which allows ample room for workmen without disturbing the walls. The return pipe must never rest upon the bottom of the chamber, but be sufficiently elevated (say 4 inches) to allow of the lower portion of the joints being readily packed. The brickwork for the side walls must be 9 inches thick, and the bottom should also be bricked and grouted to prevent the pipes when heated drawing the moisture from the ground. It is surprising, if confined in a chamber where they can draw a bountiful supply of moisture, how rapidly they rust, until the metal is so reduced that they will not bear any extra strain. It is also a general mistake to cover the mains as they are placed in, for however good the chambers may be the pipes rust considerably. Every part of the pipes before they are covered should be coated with red lead and oil, which preserves them for a greater length of time than many would think.

The joints of all the main pipes that are buried in chambers, and intended to remain permanent, should be packed with iron filings, which will insure the joints remaining sound as long as the pipes last. This is not the case when they are packed with oakum and the patent putty or cement that is used by some persons. I have ample proof that joints packed after this fashion are not durable; on the contrary, they will not last more than seven or eight years on the mains constantly in use. The oakum is thoroughly worn out, and the joints, without they are repacked, give unspeakable trouble. Certainly this is the quickest mode of joint-packing that can be adopted, but it cannot be too strongly condemned for all joints that are beneath the ground. Those exposed in the houses are always in sight and can be readily attended to in cases of leaking.

Reliable valves are of vital importance in a complete system of heating by hot water. The ordinary throttle valve should not be used on any of the flow pipes, for they fail to stop the heat from entering the houses after they have been in use for a short time. They will do fairly well on the return for the purpose of a check in case they are needed, but even for this position we do not care for them. Two of the best quality screw-down valves should be employed for each house, and then with additional valves on the main pipes for each separate branch there is some chance of holding back the water in case of an accident in one of the houses. To

empty thousands of feet of 4-inch piping is a very serious matter when water is scarce, but whether scarce or not a much greater length of time is occupied in refilling them before the requisite heat can again be raised, and this is often a matter of very great importance, especially if a failure occurs during the forcing season or when the weather is very severe. It is not my intention to recommend makers of valves. I have tried many and have found them answer their purpose, one as well as another. But there is one matter that is worthy of consideration. The majority of screw-down valves stop the heat from entering the houses when screwed down, but how many will hold back the water? My experience points to the fact that none will effect this and prove water-tight after they have been in use from six to twelve months. I could understand a pair of valves failing to do this if an enormous pressure of water was behind them, but when this pressure is held back by a pair of valves to every house as well as two or three pairs upon the mains, and the pipes would then run themselves empty, the valves are not what they ought to be. Great strides have been made undoubtedly, but there still remains much to be done before the valves used in our hot-water arrangements are perfect and capable of doing that which they are expected to do.

Expansion valves or joints some contend are unnecessary, but I believe they are of real importance in insuring the safety of the pipes when heated to the highest extent, which very often is the case with the pipes acting as mains. When the pipes are hot they must expand considerably, and if some provision has not been made they are liable to break. I remember once seeing an extensive arrangement tried for the first time, and many of the joints packed with iron filings were drawn and had to be repacked. If the pipes had been provided with a pair of joints on the two mains some distance from the boiler this would not have occurred. In a straight length of pipes the expansion on the mains is considerable, and can be tested when joints are used by marking the pipes when cool, which will at once prove the necessity of these valves. Care must be taken when these valves are arranged on the pipes that they are sufficiently far from the ordinary joint of the pipes to allow of the flange being well pushed back, so that repacking can be done when necessary. When plenty of room is left for this it is not difficult to repack the joints when they require this attention. If arranged close to the joint of the pipe as was done here there is no chance of packing them without cutting them out, which we have recently been compelled to do.

It is surprising what a large amount of rust and dirt becomes deposited in the pipes in the course of twelve months, and we strongly advise the whole of the water to be run out of the boiler and pipes annually. The usual means provided for this purpose are sadly inadequate, a small pipe only being inserted in the boiler by which this can be accomplished. This is ample for running out the whole of the water, but the dirt falls into the mains, and from the mains into the boiler—there to remain, for it is impossible to get it out through the pipes usually employed. In all forms of the saddle boiler, instead of one two pipes should be inserted, one on each side of the end, and the bottom of the pipes should be exactly level with the base of the boiler. In boilers capable of heating from 7000 to 10,000 feet of 4-inch piping the pipes inserted for this purpose must not be less than 3 inches in diameter, which would allow of the water coming out with force if a valve or cap that could be entirely removed was also employed, and thus bring with the water all the dirt and sediment. In addition to this the boilers could be well washed out by turning on the water supply at the feeder.—WM. BARDNEY.

SNOWDROPS.

THE modest pearly Snowdrops are no less favourites in the gardens of to-day than they were in the gardens of half a century ago, notwithstanding the hosts of spring-flowering bulbs now added to collections.

They are now, as then, principally valued for their early flowering. Even in cold regions they begin to open their snowy flowers with the new year, continuing for about two months or so, making our woodland walks both beautiful and interesting. Nothing, it is said, reminded our soldiers so much of home as to see this welcome visitor around their camps in the Crimea.

"Like pendant flakes of vegetating snow,
The early heralds of the infant year,
Ere yet the adventurous Crocus dares to blow,
Beneath the orchard boughs thy buds appear."

Although not strictly true this is very appropriate even yet. The poet was probably not aware of the later introductions of Crocuses, some of which bloom from early December almost without intermission until the following autumn. An old garden is rarely if ever explored without the visitor's attention being drawn to the fine old well-established rows of



Fig. 41.—*Galanthus Elwesii*.

Snowdrops, generally on each side of the carriage drive, or edging clumps and borders in the vicinity of the mansion that have been left undisturbed time out of ken. In a few cases they have escaped to the neighbouring plantations, where whole sheets of pure ivory white flowers may be seen even yet.

The common Snowdrop is generally quoted as a native of Britain. It is by some, however, considered an escape to be accounted for in some such way as that above stated. Where plenty of space can be afforded massing or grouping are by far the most effective ways of planting these bulbs, *G. nivalis*, the most common species, being the best for such purposes. It has given rise to numerous varieties or forms, such as *Melvillei*, *major*, *Redoutei*, *caspius*, *Imperati*, *præcox*, *latifolius*, *reflexus*, *serotinus* fl.-pl., and many others. A few of the above are as large, if not more so, than the newer *G. Elwesii*, a very distinct plant, and they are in every way superior for planting in quantity. The process of raising them from seed, as shown by Mr. Melville of Dunrobin Castle (who made rapid strides in the development of the old *G. nivalis*, and to whom we are indebted for many seedlings) is very interesting, owing to the wide variations of the seedlings, and as the chances are all in favour of useful varieties being raised, one that ought to be persevered in, with proper attention to selection from the largest and best developed only.

The mode of planting these, as almost all bulbs, depends entirely upon the nature of the soil. Where that is good it is only needful to carefully dibble them in. Where the soil is heavy or retentive, however, a larger hole must be made, and a little rich soil placed in with the bulb.

Deep planting is often practised with the Snowdrop, and the ground above them is utilised for Squills, Hyacinths, Tulips, and other bulbous

plants that begin to flower as the Snowdrops fade. Besides affording a succession of flowers, which is always a consideration, they will while there have the benefit of a beautiful light green carpet of foliage, which will show them off to the best advantage. It is perhaps not generally known that considerably more than half the Snowdrop bulbs sold by the trade in this country are home-grown, the small farmers and cottagers of Lincolnshire supplying them.

The following are brief descriptions of the principal forms:—*G. nivalis* might almost go without description, as there is hardly a garden of any pretension that does not have patches of these spring favourites. The varieties, however, may be mentioned, as they are not so plentiful as the type. *G. nivalis Melvillei* is one of the most handsome. Its large well-formed flowers never fail to attract attention. *G. æstivalis*, a free-flowering well-formed variety, about the earliest. *G. reflexus* is curious, but the flowers are small. *G. latifolius* is very distinct, having large broad strap-shaped leaves, very free flowering. *G. Sharlocki*, in which the spathe is divided into two separate segments, is very distinct in appearance. It is frequently two instead of one-flowered. *G. Imperati* is also worth mentioning, as well as many of the curious double forms. *G. plicatus* (the Crimean Snowdrop) is very early, a much stronger growing species than the last, and from which it widely differs in its plaited leaves, which are twice folded like the plaits of a fan; the flowers are large, and have more green in the petals than *nivalis*.

Galanthus Elwesii is a distinct species (fig. 41), readily recognised by its green-based inner segments, which show prettily between the outer ones, and also by its very glaucous leaves a good species for pot culture, and also for dry positions in light rich soil. Concerning this species a correspondent wrote some time ago as follows:—"Of all Snowdrops this is one of the most distinct and effective. The flowers are larger than those of *G. plicatus*, and are readily distinguished from all other species or forms by the dense green basal blotches of the three inner segments. It is named in compliment to Mr. Elwes, and was first found by M. Balansa in 1854, on the Gamauladagh Mountains to the north of the Gulf of Smyrna. It appears to have been introduced to English gardens by Mr. Elwes, who collected it on the mountains near Smyrna in 1874. The plant is now tolerably abundant in all good gardens, where, with the still larger *G. Imperati*, it well deserves a place."—M. S.

THE CULTURE OF THE ORANGE.

THE cultivation of the Orange in the open air has not, I believe, been attempted of late years in England, except in rare instances in some of the southern counties, and yet it is a half-hardy plant which will bear much cold. When it was first introduced into this country it was planted out of doors, but the attempt was unsuccessful, probably because the situation may not have been well chosen, or the seasons may have been exceptionally severe. Lady Brassey tells us in her interesting book that she has seen it flourishing in Japan surrounded by icicles, and everyone who has passed a winter in Italy, especially at Nice or on the Riviera, must have seen trees loaded with fruit in times of severe frost, whilst snow occasionally lodged on their branches. At Mr. Luscombe's, near Kingsbridge in Devonshire, and at Lord Morley's at Salcombe in that county, I have been told that Oranges are grown against the garden walls, and a Lemon tree is said to bear fruit out of doors at Dunster Castle in Somersetshire, but what amount of protection is given them in winter I do not know. The Lemon is much less hardy than the Orange.

Having myself observed at Nice, Florence, and elsewhere in Italy, that Orange trees were but little injured by severe frost, and considering that the climate of the Isle of Purbeck is milder than in many other places, I was induced, about thirteen years ago, to plant a small Orange tree between the Peaches against a south wall of the kitchen garden here. In the first two or three years it made but little progress, but since then it has steadily increased in size, and it now covers a space of wall 8 feet 6 inches high by 7 feet wide. It would have extended much farther if it had not been intentionally kept within those limits in order not to encroach on the neighbouring Peach trees. At this moment it is looking as healthy and flourishing as any tree in the north of Italy, quite concealing the wall by its dense dark green foliage from the ground to its summit. It has at present upwards of four dozen golden Oranges, besides smaller green ones from last summer's flowers, which will not ripen till next spring. The crop being rather heavy, the fruit at present is not large, but in some former seasons I have gathered Oranges measuring 11½ and 10½ inches in circumference. Unfortunately the sort is not a good one for the table, but it makes excellent marmalade, and for the last two years a sufficient quantity has been gathered to supply my wants.

I have spoken of the Orange as a half-hardy plant, and I have treated it as such. During the winter a couple of Melon lights are placed in front of the tree in a sloping position, the top resting against the wall and the lower ends being supported by a temporary dwarf wall of loose bricks, which is easily removeable if necessary. The sides are always left open, except in

very severe frost, when, and only then, they are closed by moveable triangular-shaped boards, and the whole is covered by matting or a piece of old carpet. During the winter which has just passed this has rarely been required.

The tree at this season of the year, when so few flowers of any kind are to be seen, is very ornamental, the bright golden fruit being in striking contrast to the dark green foliage, and even on this account, if on no other, it is well worth cultivation. With regard to treatment, I have borne in mind what I have seen in Spain and Malta, where Orange orchards are sometimes irrigated by the introduction of streams of water at the time of flowering.—THOMAS BOND, *Tyneham, Isle of Purbeck, Dorset.*

NOTES ON PLANTS.

HIBISCUS SYRIACUS.—Gardeners who require flowering shrubs for a display in autumn out of doors will be making the most of the few weeks that remain before the planting season is closed. The beautiful varieties of the above hardy Hibiscus ought not to be overlooked; the white flowers of the type are not so frequently seen as they deserve to be, and in addition to it there are some distinct and gay-coloured varieties now to be obtained from the nurserymen. Purplish, rose-coloured, striped, and pink will be found amongst them, all as free and as hardy as the white one, and quite as ornamental. Groups of such, if now planted in the shrubbery—or if a large bed can be afforded a selection of these Hibiscuses might be planted in it—will make a pretty picture in the autumn. Messrs. Noble exhibited a set of these new varieties from their nurseries last autumn, and they were much admired and inquired after by those who saw them. When once obtained such plants can be readily and abundantly increased from cuttings inserted immediately after the plants have flowered. There is no reason why these plants should not be turned to account for forcing, as a high temperature does not materially injure them, whilst it forces them into flower in a short time after it is applied.

FORSYTHIA SUSPENS.—Following close after the winter-flowering Jasmine, which has been exceptionally beautiful with us this year owing to a little extra feeding at the root, which our plants were allowed during the summer, and no doubt as much to the excellent season last summer and autumn proved for the proper maturation of newly-made wood. The Forsythia has been benefited, for it is a perfect curtain of thousands of interlacing shoots, every one of which is a long wand of bright yellow buds, for the expansion of which a day or two more of sunshine is all that is needed. This beautiful wall plant must not be confounded with the comparatively poor *F. viridissima*, though it sometimes is, and of course always to the disparagement of the former. It would be difficult to find a more useful, beautiful, hardy wall-plant than *F. suspensa*, as it grows quickly in almost any soil if the wall against which it is trained is warm and sunny. For the front of a dwelling house there is but one plant to equal this, and that is the yellow Jasmine. Both might be grown together, the one to succeed the other, in making the garden gay at a time when vegetation in general is only beginning to wake up out of winter's sleep.

HARDWOODED PLANTS.—The present is the most favourable time for inserting cuttings of the best of these plants, of which the Tetrathecas, Dillwynias, Darwinias, Leschenaultias, Acacias, and Boronias are some of the best known and most useful. By placing an old plant or so of each in a warm sunny house, temperature 55° to 60°, and syringing them now and again, a crop of young shoots will be developed, which if taken off with a small portion of the old wood or a heel, and dibbled into pots of very sandy peat, covering them with a bellglass, and keeping them in a shaded part of the same house, will strike root in a comparatively short time. Fat shoots—that is, those growths which are made during the most vigorous growing period, are very unsatisfactory as cuttings when compared with shoots obtained as above. Autumn and winter are the chosen seasons for inserting cuttings of Heaths and Epacris, whilst early spring gives the best results in the case of the majority of other hardwooded plants. For Correas, Eriostemons, and Croweas, grafting is the preferred means for their propagation, *Correa alba* being the stock used for the two first, and *Eriostemon* intermediate for the Croweas. Where stocks are obtainable these plants may be grafted now, a close case with a temperature of 55° being the nursing place for them till a union is effected. Even Boronias, such as *B. Drummondii*, *B. pinnata*, and *B. serulata*, are best when grafted on *B. elatior*, a free-growing species, and well adapted to form a stock for the above delicate kinds. *B. elatior* is perhaps the handsomest and freest of all cultivated Boronias, and *B. megastigma* is equally charming for its fragrance. There is some danger of these beautiful hardwooded plants being

allowed to go out of cultivation, the easier managed softwooded things being preferred because they are less difficult to grow than the Australian plants, though they are not a whit prettier, if they are even as pretty as some of those above enumerated. A large healthy specimen of *Phœnocoma*, of *Aphelexis*, of *Pimelea*, or of *Darwinia* (*Genethyllis*), is a rarity in gardens nowadays, and as a natural consequence a man able to grow such is equally rare. We shall come back to these favourites of bygone years when the softwooded favourites have had their day, and we shall most likely wonder why we ever neglected them.—W. N.

MUSHROOM-GROWING.

"Y. B. A. Z." is responsible for my having spent 1s. in the purchase of "Mushrooms for the Million." I could not resist his article on p. 146; but let me at once say, I do not so far regret the expenditure. I, however, already want some advice.

Having read the first fifty pages (not overlooking the concluding lines of the preface) I obtained the necessary manure, which for some days I have been carefully turning and purifying with a view to forming a bed in the open air. Let me here say that although I have had plenty of experience in preparing hotbeds I have never before attempted to grow Mushrooms.

I have now reached pp. 95 and 96, and am somewhat staggered at finding out for the first time that it is almost hopeless expecting a crop from beds made up at this time of year.

Now, having gone so far in the attempt, do you advise me to continue it? I can make the bed under a very high wall facing east on a piece of ground where the sun loses all effect after midday at the latest, or on a piece of ground facing south, parallel to and shaded by the same wall, and having a hedge on the north side. These are the coolest parts of the garden except one, where, owing to buildings, is quite shaded.—N. S. R.

[If we had procured a considerable bulk of suitable manure in preparation for Mushroom-growing, and also had a cool shaded place, we should certainly continue the work of preparation and make the beds. By using good spawn and good soil, also maintaining a regular gentle heat in the beds by thick or thin moist coverings, as might be needed, we should expect plenty of Mushrooms in June and July. We saw exceedingly productive beds last summer in a similarly cool place in the open air. We should not regard our procedure as an experiment, but any persons adopting such a practice for the first time must necessarily proceed experimentally, and failure or success would depend on their own aptitude in the management of the bed. "N. S. R." must now decide the question for himself.]

SWEET PEAS.

THESE are amongst the very best of all annuals; they are admirably suited for the garden of the cottage and the mansion; they are very free-growing, and they never fail to flower profusely. The blossoms are bright, pretty, and sweet; in fact, in these respects it is a difficult matter to match them with any class of flowers. Of varieties we have plenty, the best being *Scarlet Invincible*, rich scarlet; *Butterfly*, blue and white; *Painted Lady*, rose and white; *Purple Invincible*, red striped; *Princess of Prussia*, lilac; and *Fairy Queen*, rosy white. Masses or short rows of each of these are very pretty, and the mixture of the whole has a charming effect. We rarely grow them separately, a mixture being our favourite mode of having them.

The seed and plants are very hardy, and it is quite a mistake to delay sowing them until the warm weather. Those who do this will only have a short season of bloom, but those who sow twice or more in the year may have blooms in abundance from May until November. The first seed should be sown at once, and another in May. Those sown now will be in flower in about ten weeks, and they will continue until September. The plants from the May sowing will not begin flowering until August, and they will continue until the end of the season. We have sometimes had them very early by sowing and growing them in pots, but we have not taken this trouble with them since we found that they succeeded so well.

Moderately rich soil is the most suitable for them. When too rich they make too much growth; when the soil is very poor they soon fail in dry warm weather, but they delight in a sunny position, and should never be sown in the shade. We frequently put a row in where there is a screen required either to hide some offensive background or afford shelter. In other cases only little round patches of seeds is sown in the mixed borders, and as the plants grow a few ordinary Pea stakes are placed around them and form a very pretty pillar. The seed should be placed about 3 inches below the surface in sowing, and care must be taken that the mice do not destroy them, for they are as fond of these as they are of the culinary varieties.—M. M.

CROPPING.

(Continued from page 186.)

CROPPING, as practised in gardens and by growers for market, is of two kinds—viz., separate cropping, the ground being only occupied by one crop at a time; and simultaneous cropping, when it has several at the same time. Each system has its merits, respecting which there is considerable divergence of opinion, but the separate system is the most

satisfactory as regards the quality of the productions, whilst the simultaneous cropping system affords a greater weight of produce, though the separate system can be practised in large gardens where there is room for a proper rotation, and also on large tracts of land cultivated with a view to profit, as it is the least expensive. Ground with good cultivation will, of course, under one crop afford a very satisfactory result, and probably as large interest on the outlay of capital as land subjected to simultaneous cropping, which entails a greater outlay in manure, seeds or plants, and cultivation. For instance, a field of ten acres upon the agricultural system will not need more capital than an acre of garden ground upon the simultaneous cropping system, and the profits are about equal. The rent of the farm land is perhaps £1 per acre, that of the one acre of garden ground, £5. It clearly would not answer to cultivate the one acre upon the same system as the ten.

There is great difference between allowing weeds to grow up with a crop to its detriment, and taking a crop of something between or along with another. The sowing of Radishes with Onions means a crop of the former before there is any damage done to the Onions. Overcropping is the only likely disaster in the simultaneous system, and though far more skill, attention, and judgment are essential to its successful practice, it is attended with satisfaction in obtaining a great variety of productions in considerable quantities that could not be attained by the separate crop system from the same ground. In private gardens the system of cropping is different from those where vegetables are cultivated for sale, as the demand is exceedingly variable, therefore no system can be given that would be applicable under all circumstances. The market grower can follow one crop with another that will be strictly in rotation, but the private grower is often obliged to follow a crop with another of the same nature.

This opens another question as to what will maintain ground subjected to simultaneous cropping in continued fertility. Mineral substances are not much taken into account by the most successful gardeners, as they rely more upon decomposing matter applied in quantity to prepare the ground for almost any crop. We have to face planting or sowing ground after crops that even experience has proved inadvisable, and as fresh ground is not available what are we to do? For instance, if we have worn-out Asparagus or Strawberry beds a proper rotation would point to plants of a distinct natural order and short duration, but if we must follow with the same, what then? If we add mineral matter, and after mixing with the soil replant, the chances are that the succeeding crop will not be any better than that removed. But let a good dressing of manure be given, let the surface soil be changed for that underneath, the surface spits full of decomposing matter be displaced by the bottom or second spits as poor apparently as it well can be; but after this is enriched by manure what a change is brought about! One of our best Dahlia growers has grown his plants on the same ground for nearly thirty years, taking prizes with the blooms last year, and the ground is simply heavily manured and trenched. I have noticed that in replanting after trees that have been taken down in an old plantation that where the ground was trenched after stubbing the young trees made very much better growth than where it was merely stubbed, and in gardens I have noticed that where crops of a particular kind were not satisfactory they were improved by trenching. I conclude, therefore, that mineral matter owes its potency to the solvency effected by the action of manure, the change effected by the roots of plants, and its exposure or otherwise to the atmosphere. Manuring and stirring the ground are the foundation of all cropping. I do not for a moment entertain an opinion that dressings of even lime, much less nitrates, phosphates, &c., are not beneficial, but I feel convinced that those are no substitutes for animal manures. I would even go further, and submit that lime and the others are mainly beneficial through the change they effect in the soil constituents, but chiefly by accelerating decomposition or liberating food that would otherwise remain inert.

Where there is little chance of rotation of crops through many sorts and a large production being required from a small extent of ground, the only plan is to manure heavily and cultivate deeply. In all cases, however, it is sound practice to seek a change of crop as frequently as circumstances allow.—G. ABBEY.

(To be continued.)

NOTES ON GRAPES.

GROS MAROC GRAPE.—I had the pleasure of planting a Vine of this variety in June, 1881, along with seven Vines of Muscat of Alexandria. They fruited the following year and have borne good crops ever since, the Muscats being all that could be desired. Gros Maroc has proved a free setter and a strong grower, the bunches large and even, the berries of good size, round, and covered very thickly with most beautiful bloom. As to quality, however, its skin is tough, the flesh coarse and stringy, and the flavour almost absent. I consider it excellent in appearance, but worthless as to quality. It has not been fairly tested as to its keeping qualities.

I consider Mrs. Pince will yet prove one of our most valuable late Grapes when its culture is better understood. It appears to require a much longer season than Lady Downe's or Alicante to ripen it thoroughly, as growing with them I have noticed it never colours so soon or so perfectly; and in very warm autumns, such as the last, it is much better in this respect, and keeps better.—W. H. DIVERS, *Ketton Hall*.

BLACK HAMBURGH GRAPE.—When Mr. Stephen Castle prophesied

that Gros Maroc would displace the Black Hamburg for Christmas use, I understood him to imply as a market Grape, and as such I replied. Generally speaking, Black Hamburg is out of season after September. At the same time, I had in my mind the wonderfully fine late Black Hamburgs that are always to be seen at Drumlanrig. I venture to say these are the exception, not the rule. We often hear of bunches of this variety being kept plump until the end of the year, but seldom see them. During last November Chrysanthemum shows were held throughout England, and at most of these exhibitions prizes were offered for black Grapes. I would like to know in how many instances out of its own special class it was awarded first prize, and as it seems to be so plentiful at Christmas it would be interesting to know something of the quantities that go into Covent Garden Market at that festive season and the prices they realise when passing through the salesmen's hands. We can and do keep the Duke of Buccleuch until the end of the year, but, generally speaking, it is out of season after September.—J. MCINDOE.

A VISIT TO "CANNELL'S."

RECENTLY I had an opportunity of visiting the "Home of Flowers," Swanley, and, although it was not a time of year to find it at its best, I saw much that gratified me. Mr. Cannell's nursery has been so often described that I will not attempt to give a general description, but to note a few good plants which were in bloom at the time of my visit. As is well known, Zonal Pelargoniums grown in pots for winter decoration form one of the features of this establishment, and out of the vast number of varieties I selected the following as being most noteworthy and useful for growing in pots. Up to the present time a good snow-white variety has been wanting, other colours being forthcoming in abundance; but the two varieties under notice—Le Cygne (double) and Queen of the Belgians (single)—have supplied the want. By the number of flowers, their quality and purity, these varieties will henceforth be invaluable for growing in pots for supplying white flowers in abundance through the winter months. The other varieties I found especially worthy of notice were Lord Chesterfield, of a beautiful shade of soft magenta; Ajax, soft reddish scarlet; Dante, rich magenta suffused with purple; Cato, orange-scarlet; Lady Chesterfield, deep salmon, a grand acquisition; Plutarch, bright scarlet; Rose, rosy red; Imogen, salmon; Celia, beautiful rose; Zelia, rich crimson, tinted purple and orange; Norah, soft blush; Constance, rose; Clytie, crimson, suffused with magenta; Kate Greenaway, bright pink. The above varieties are all of the finest form and substance.

The next plants which especially took my notice were the Primulas. Swanley Purple was very attractive. Primulas of this shade of colour are generally spoken of as "washy," but Swanley Purple is most decidedly a distinct colour. Princess Beatrice, salmon, margined with white; Lilacina, Swanley Red, Queen of the Whites; The Queen, white, slightly tinted with rose; and Emperor, carmine, were simply splendid. Cinerarias were represented by those sterling varieties March Past, Victory, Mr. Cullingford, Dr. Masters, and Excelsior. The Cyclamen house was filled with a wealth of bloom, the strain also being superb. Amongst the winter-flowering Begonias *B. Carrierei* was especially noteworthy. It is of good habit, besides being a most profuse bloomer, even in a very small state. The larger plants were about 18 inches high and as much in diameter, and were covered with their white flowers. A glance through several houses show the extent of business enjoyed by this establishment. Dahlias were being propagated by thousands, and the range of frames devoted to Carnations and Picotees were astonishing.

The surrounding country may well be termed the "Home of Fruit," for stretching away further than the eye could see were fruit tree and Strawberry plantations to the extent of thousands of acres. It is quite certain that the fruit farmers believe in liberal applications of manure, for Mr. Cannell informed me that 45,000 tons were delivered at Swanley station last year.—A. YOUNG.

MANAGEMENT OF HORTICULTURAL SOCIETIES.

MR. WATERMAN'S very interesting essay on the history and management of horticultural societies would doubtless be read with much pleasure by the majority of your readers. One paragraph, however, or portion thereof, should not, I venture to think, pass unnoticed. Speaking of restrictions in schedules he says—"At Liverpool members exhibit free, to non-members the entrance fee is 5s. for each show, and all classes in 1884 were open, but to the discredit of the Liverpool gardeners, or the Committee of the Association, it must be admitted in the year of grace 1885, four classes are within the ten miles radius; Class 88 at the summer Exhibition, and Classes 56, 62, and 65 at the autumn Show." To those who have not seen a Liverpool schedule, I may state Class 88 is for a collection of twelve kinds of vegetables—not the only class in this section, as there are eleven others open to all comers. Class 56, which is for four varieties of Grapes, is open; Classes 58, 62, and 65, which are local, are for Apples and Pears. In addition to these there are seventeen other classes for fruit (open) in the same schedule.

Now, I respectfully invite Mr. Waterman to explain to the readers of the Journal why the restriction of four classes out of 222 is a discredit to the Liverpool gardeners or the Committee of the Association. True, last year all classes were open, but it is on matters of experience by which committees of management should be guided. Last year again confirmed previous opinions, that it is an unfortunate fact that we cannot produce by outdoor growth vegetables and many kinds of hardy fruit to

compete with the slightest prospect of success with those resident in more favoured localities.

Horticultural societies are established to promote and encourage the cause of horticulture; this is an admitted fact. Then why make provision in schedules which would tend to the contrary? For a society to make classes in which its own members, through no fault of their own, are debarred from competing with the slightest prospect of success is not the way to encourage horticulture in its district; it is direct discouragement.—A. R. COX.

GUM ON CAMELLIAS.

I AM much obliged by your publishing my letter, and for the trouble you have taken to give me information on this subject, and I am particularly obliged to Mr. Lynch for his careful examination of the leaves; but may I ask whether, if the gum exuded from the surface of the leaves, there would of necessity be any sign on the surface after the gum had been washed off?

After reading the answers you printed, I determined to make a further and closer examination into the state of my plants. I am unable, through lameness, to go up a ladder myself, but my gardener is a very careful and very unprejudiced man, and happily has a remarkably keen eye for blight, so I got him, while I was present, to make a close examination of the Tecoma overhanging the worst affected Camellia. He could discover no insects at all upon it. He then examined the tops of the Camellia very carefully, and found the uppermost parts quite free from gum, and no sign whatever of aphides, scale, or mealy bug; and as to all the lower parts where there is so much gum, I can attest that there is no aphid visible, and very little scale. He also examined the Tacsonia which overhangs to a small extent the less affected Camellia, and this (the Tacsonia) he found perfectly clean, and the uppermost part of this Camellia also free from gum. I am sorry that I made a mistake in saying that a little mealy bug was found in the autumn on the Tecoma, I should have said scale, and there were very few, and quite small ones.

I may mention that I have another large Camellia trained against a wall at the far end of the house from the bad Camellias, and though this Camellia on the wall is quite close to the Habrothamnus, the flower trusses of which were certainly full of aphides, it has no gum on it, and the plants and floor under the Habrothamnus have not, I should say, a hundredth part of honeydew as compared with the amount of gum on the bad Camellias, which is so great that it has run down on to the floor of the house in large spots. Surely if this were from aphides, scale, or mealy bug, the vermin must be visible somewhere in huge numbers.

It seems to me much more likely that the mischief should arise from what you suggest—namely, drought at the roots. But then the plants are kept well watered, and are growing freely. I examined the soil too with a rod to the depth of over 2 feet, and apparently the earth was just moist and of a somewhat sandy character, so that it hardly seems probable that drought at the roots is the real cause of the gum, while it seems, under the circumstances, impossible that it should be caused by any blight.

The shoot, in the list of the box which accompanies this, was taken from the worst affected Camellia about a foot or more from the top, as being the highest shoot showing any sign of the gum. The loose leaves are from the two worst plants, except the very black leaf marked I, which is from a smaller white Camellia growing between and under the two larger and worst affected ones. This white plant seems to receive the gum from the trees above it rather than to produce it spontaneously. The black leaf was taken off from quite the under part of the plant, and close to the ground. I hoped that perhaps something further may be learned from an inspection of these additional leaves and shoot.—BORDERER.

After closely examining the leaves sent and noting attentively the points in the letter admitting the presence of a "little scale," also that the white Camellia receives the "gum" from the worst affected plant, and further that the soil is moist, we could arrive at no other conclusion than that the condition of the leaves is due to the presence of insects, scale probably, from the leaves or stems above. We, nevertheless, requested Mr. Lynch to examine the specimens very closely and report further on the whole case. Here is the result:—

"I have carefully examined the additional specimens of Camellia leaves, and further consideration leads me still to the conclusion stated in my letter of your issue of February 26th, page 171. That the origin of the glutinous matter is exterior to the leaf I have no doubt, and it can come, so far as I am aware, only from insects. I have thought it well, however, to submit leaves to Mr. W. Gardiner, one of our most able botanical investigators. Taking first the point of view of a normal secretion, he says, 'Besides arising from specialised structures, such as nectaries and the like, nectar may in some cases—e.g., the very young stem and petioles of *Manihot Glaziovii*—as we saw, and as I find from the same positions in a young plant of *Bryophyllum* grown in a very hot house, arise from the activity of ordinary tissue cells. When, however, the petioles, leaves, and stems are old, fully developed, and cuticularised it is impossible, I should think without doubt, that nectar could be secreted from them. This is the case with the Camellia. The nectar there has almost certainly not come from the leaf.' Then further on he writes, 'I have made sections of the leaf. The epidermal cells are not affected. The cuticles are entire, and I see no reason to believe that any of the tissue is affected.' This testimony is as strong as any can be in support of the opinion I have expressed; and as Mr. Gardiner finds as I did that the tissue is perfectly healthy, the possibility of an abnormal exudation involving the breaking down of tissue is, I think, disposed of. Indeed, any exudation of that kind would not, I think, resemble the glutinous matter now in question.

"'Borderer's' question, 'Whether, if the gum exuded from the surface of the leaves, there would of necessity be any sign on the surface after the gum had been washed off,' does not admit, from me at any rate, of a direct answer, because I cannot conceive the possibility. If it were a normal secretion there would be no tale told by a mere microscopic examination. But this is not normal to the leaf, and that, I believe, is admitted. If, however, there were an abnormal exudation of anything like this extent I can but think that the leaf would necessarily show it. There would be disease of some kind, and somewhat extensive it would be. To sum up, it may be said that a normal glutinous secretion is unknown from *Camellia* leaves, and that an abnormal exudation could only result from the destruction of something, and that it would differ, as before remarked, from this.

"I have carefully read 'Borderer's' letter, but need only remark from it that 'the Tecoma overhanging the worst affected Camellia' leads me to think that he will yet have the means of demonstrating to us that the glutinous matter has certainly been derived from insects. To the suggestion given in the *Journal of Horticulture*, I may add that he would do well perhaps to look on the upper surface of the sheet of glass for spots of honeydew, as there it would be seen pretty easily, and of course it would not have exuded from that substance. It would have come from something over it. I shall be interested to see 'Borderer's' report, and if the matter cannot be settled satisfactorily to his mind at once, I hope when the opportunity arrives he will kindly record his ultimate opinion.—R. IRWIN LYNCH, *Botanic Gardens, Cambridge.*"

NEW VEGETABLES.

THE notes that have appeared in the *Journal* under this heading induce me to put in writing a question which I have often asked myself relative to Peas: Why cannot a better class of Pea be purchased at the ordinary greengrocers' shops? In the height of the season, and when they are mostly plentiful, the Peas supplied to the public are flavourless, and in the majority of cases far from young and juicy. In my own little plot I am still old-fashioned enough to be satisfied with *Advancer* and *Veitch's Perfection*, and the few dishes I get repay me for my trouble because I know I cannot buy such. There is a juiciness and a sweetness about these Peas which one never seems to meet with in those bought at the greengrocers. Why is this? Surely the public appreciate the better class of article, or is it that the market gardener makes a larger profit out of a cheaper and more flavourless Pea? "D. W.," on page 210, after referring to some of the good old sorts, speaks of them as being "cheap and within the reach of the poorest." Unhappily this is not my experience, and I have yet to learn that a dish of Peas purchased in the shop can hold it own with those grown even in a suburban garden.—N. S. R.

["D. W." doubtless referred to the price of the seed for sowing of the varieties he named, some of which are even cheaper than *Advancer* and *Veitch's Perfection* that are not easily surpassed in quality. Inferior varieties, comparatively poor soil, and the heating of large bulks of Green Peas in sacks, are among the contributory causes of the general low quality of market Peas.]



TO ROSARIANS.—A correspondent "X. K." asks if any reader of the *Journal* will be kind enough to give such directions and measurements as will enable a village carpenter to make the best possible box for exhibiting twelve Roses.

— A WINCHESTER correspondent forwards us a fine spike of *CELSIA ARCTURUS* and remarks:—"This is a plant which is not very generally known. The first time I saw it, about four years ago, was at Clevedon, where I procured some cuttings. The plant I saw there was a good specimen with six or seven stout spikes on it, and it looked very handsome—in fact, rivalling many Orchids, and a plant like the one described above could not fail to attract attention. It is very easily cultivated, and may be had in flower all through the year by a little management. It lasts a long time, every flower expanding to the tip of the spikes." The bright yellow flowers and purplish stamens of this plant render it very attractive at this early season, and it well deserves all our correspondent's praise.

— THE thirty-ninth annual Exhibition of the NATIONAL CHRYSANTHEMUM SOCIETY will be held in the Royal Aquarium, Westminster, on November 11th and 12th, 1885. The usual liberal prizes are offered in addition to a number of important special prizes of the *Veitch Memorial medal*, and £5 for thirty-six Chrysanthemum blooms will probably attract much interest. A special Exhibition of late-flowering Chrysanthemums will also be held on January 13th, 1886, in the Westminster Aquarium, when prizes will be offered in six classes. The

Bristol, Yeovil, York, Chelmsford, Canterbury, Dorset, and Lincoln Chrysanthemum Societies have already become affiliated with this one on the terms we have previously announced.

— "D." writes—"At the Royal Gardens at Kew we lately noticed that two large borders had been specially set apart as an AGRICULTURAL EXPERIMENT GROUND. Plots of ground a yard or two square, and twelve in each border have been sown with what are generally known to be twelve bad and twelve good fodder Grasses. The following is a list as copied from the labels:—*Bad*: *Holcus lanatus*, *Hordeum pratense*, *Lolium italicum*, *L. perenne*, *Anthoxanthum Puelii*, *Triticum repens*, *Poa pratensis*, *Bromus mollis*, *Aira flexuosa*, *Aira cæspitosa*, *Alopecurus agrestis*, and *Molinia cœrulea*. *Good*: *Poa nemoralis*, *Avena flavescens*, *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Dactylis glomerata*, *Festuca elatior*, *Festuca duriuscula*, *F. pratensis*, *Phleum pratense*, *Poa trivialis*, *Agrostis stolonifera*, and *Alopecurus pratensis*. We sadly want experiments with not only Grasses but other plants that are likely to prove valuable for fodder, and that in such a way, too, as will leave no doubt as to their relative values for the purpose."

— IN THE notice of the HULL CHRYSANTHEMUM SOCIETY last week the Chairman's name should have been Mr. George Bohn, not Bond, as it was accidentally printed.

— A CORRESPONDENT, "F. T. L.," informs us that he has a GRAND MAITRE HYACINTH growing in water, which has thrown up ten flowering spikes, the effect being very fine, and he asks for our opinion. Our opinion is that there are as many spikes as could reasonably be expected from one bulb, and we are glad "F. T. L." is so well satisfied with his specimen.

— THE WIMBLEDON ROYAL HORTICULTURAL SOCIETY'S thirteenth annual Exhibition will be held in the grounds of Cannizaro, Wednesday, July 8th, 1885, when prizes will be offered in eighty-four classes in addition to special prizes in thirty-one classes.

— IN *Notes and Queries* Mr. Francis K. Munton, North End House, Twickenham, calls attention to some OLD LIMES AND ELMS AT TWICKENHAM as follows:—"My father-in-law's, (the late Henry G. Bohn) well-known garden at Twickenham has often been referred to in journals devoted to such matters, but I have not found any notice of the exceptional size of the Limes and Elms. The avenue was planted about 120 years ago. I recently had some of the trees measured, and found that several exceeded 100 feet in height. Are there any trustworthy statistics on this subject?"

— THE LINCOLN CHRYSANTHEMUM SOCIETY'S third annual Exhibition is announced to be held in the Corn Exchange, November 17th and 18th of the present year. The Society is making very satisfactory progress, the balance in hand being £59 13s. 8d., as compared with £29 19s. 9d. in the preceding season. An open class for forty-eight blooms (twenty-four Japanese, and twenty-four incurved) is provided this year, in which the prizes are £10, £5, and £3, and in another open class for twenty-four blooms (twelve incurved, and twelve Japanese) the prizes are £4, £2, and £1. Substantial prizes are also offered for groups of plants.

— AT THE ordinary meeting of the ROYAL METEOROLOGICAL SOCIETY, to be held at 25, Great George Street, Westminster, on Wednesday, the 18th inst., at 7 P.M., the following papers will be read:—"Notes on Sunshine Records," by Robert H. Scott, M.A., F.R.S., President; "Results of Meteorological Observations made at San Paulo, Brazil, 1879-1883," by the late Henry B. Joyner, M.Inst.C.E., F.R.Met.Soc. After the reading of these papers the meeting will be adjourned, in order to afford the Fellows and their friends an opportunity of inspecting the exhibition of sunshine recorders and radiation instruments, and of such new instruments as have been invented and first constructed since the last exhibition. The exhibition will remain open till Thursday evening, the 19th inst.

— THE question WHETHER HORTICULTURE SHOULD BE TAUGHT IN PUBLIC SCHOOLS? was discussed, says the *American Gardeners' Monthly*, by Professor Wickersham, late Superintendent of Public Instruction of the State of Pennsylvania, at the late State Horticultural meeting. Objection was made that studies were now too numerous for the six hours a day, and six or eight months in the year, of public schooling, but the Professor explained that he did not recommend the introduction of this and similar studies in addition to those already included, but in the place of some others. He contended that, as the result

of a careful study of public education, that a large proportion of time spent on geography, grammar, examples, and so forth, was absolutely thrown away; that the aim of public education should not be so much to educate, as to place children on the path to educate themselves. Public school teaching should simply furnish children with the tools by which they could cleave their own way as circumstances should arise, and not to fit them for any particular way. Children should be taught to observe, to think, and to judge. He would have a garden attached to every public school, and take the hour spent on geography or grammar, and, with the children in the garden, with the living plants before them, and a teacher capable of explaining things, do more good than the book studies of a whole week.

— A LARGELY attended meeting of growers was held at the Pheasant Hotel, Broad Street, Sheffield, on Monday, the 9th inst., when a resolution that a CHRYSANTHEMUM SOCIETY FOR SHEFFIELD be at once formed, and the necessary steps be taken for organising a satisfactory open show in November next, was carried unanimously. The necessary officers and Committee were elected, and a meeting for drawing up the rules and arranging a schedule was fixed. A good number of subscriptions are already promised, and there is every promise of success for the new Society. Open classes will be arranged and liberal prizes offered. Schedules will be advertised as soon as ready.

— REFERRING to the POPULARITY OF ORCHIDS, an American paper gives the following paragraph:—"What is the latest rage among the finest specimens of plants?" asked a reporter of a florist. "The Orchids are, decidedly. They are coming into favour on account of their many shapes and varied shades of colour. They are plants which grow without any soil, being usually tied to a block of wood or a cork suspended in the air. They require nothing but water to nourish them. The plants are very unattractive, but the flowers which grow on them are beautiful beyond comparison. They are parasites and grow well in South America. In Europe one large horticulturist with acres of greenhouses employs fourteen German naturalists to do nothing else but experiment with Orchids and produce new varieties (?). In the United States the universal love for plants has not reached a high enough plane to justify such an enormous expense. A single specimen of the scarcer kind costs 1000 dols. Mrs. Pierrepont Morgan has a greenhouse filled with the largest variety of Orchids specimens in the United States and among private people not in the business perhaps in the world. They could not be bought for a hundred thousand dollars. She employs several naturalists, and every three or four years new specimens are produced. They grow slowly and very delicately, and for that reason horticulturists do not give much attention to them."

VINERIES, VINE BORDERS, AND VINES.

IN continuation of my notes on these subjects (see pp. 24 and 46) I now come to the question of which is the most suitable compost in which to plant Vines with the object of securing the best permanent results with moderate expense. The top 3 inches of a sheep or deer park, when to be had, or a down which has been grazed by sheep, is the best possible soil in connection with the addition of small quantities of ingredients named below for the growth of the Vine. Turf, if taken off a down, will be necessarily fibry from its being almost continually grazed; and in consequence of the soil being, as a rule, shallow and calcareous, it will be rich in consequence of the sheep being pastured on it. To five cartloads of this loam, which must be cut and stacked at least six months previous to use, add one load of wood ashes, one load of lime rubble, one load of fresh horse droppings, and about an ordinary-sized garden barrowful of fresh soot. Turn the whole over a couple of times prior to wheeling it on to the border when dry. Make the border in sections 6 feet wide from the front wall (the arches and side being built up with turves), and the same distance from the back one. These spaces will afford ample scope for root-action to the two sets of Vines for two or three years, when the intervening 5 feet space should be filled with a compost the same as indicated above. In preparing the border due allowance should be made for the loosely thrown-together soil subsiding 6 or 7 inches within as many weeks from the time of making it. The border must, therefore, be made 6 or 7 inches above the top of the arches supporting the front wall, whence it should slope towards the pathway. The loam having been cut down in breadths of 3 or more feet from the stack with a spade when the weather and the ground are dry, it may afterwards, if very fibry, be broken up a little with a steel digging-fork. The ingredients indicated may then be added and well mixed, placing it in the house in a moderately dry state; the Vines may be planted in it a few days later.

PLANTING THE VINES.—Assuming that young Vines have been raised and tended during the interval, as advised at page 46, they will be ready for planting next month. I find from experience that it is a mistake to plant young Vines before they are sufficiently high to show a few inches

above the front wall, and so be under the direct influence of the sun. But by way of substantiating the correctness of this statement as much as sounding a warning note to others, I may say that nearly four years ago in planting the new vineries here with Vines struck in February, I was induced (having plenty of home-struck Vines from eyes kindly sent me by that veteran gardener, Mr. Gilbert of Burghley) to plant the Muscat house on the 18th of March with Vines from 9 to 12 inches high. The result was, that those planted under the full influence of light and sunshine against the back wall, which, moreover, retained some of the heat imparted to it by the sun's rays, grew most satisfactorily, while those in the shade of the front wall were at a standstill for ten or twelve days, and a few of them had to be moved and stronger-growing Vines planted several weeks later. Profiting by this experience I planted the remaining three vineries towards the end of April and early in May, and every one of the two sets of Vines (back and front) grew splendidly. The Vines, however, should be either planted or shifted into larger pots before they become root-bound.

Preparatory to planting the Vines make a series of holes 2 feet apart, beginning at 2 feet from the end, between the front wall and the hot-water pipes, the entire length of the border; then see that a sufficient quantity of rather fine soil is provided of about the same temperature as that in which the young Vines are growing in the pots to place around them when being planted, so as to prevent the plants experiencing any check in consequence of their roots coming in contact with a compost less warm than that in which they are growing. Turn the Vines carefully out of the pots and plant them—the permanent ones midway between the rafters, and those for yielding a crop of fruit the following year between them—disturbing the roots as little as possible, about 1 inch deeper than they were in the pots, and make the soil firm about them in planting; then put a stick to each plant for support and secure them to the trellis, but leave them sufficiently long to subside 6 or 7 inches with the soil. Bearing this in mind, tie the sticks loosely to the trellis, so that sticks, Vines, and soil may all subside together. This being done give sufficient tepid water through a rose to settle the soil about the roots, and afterwards give a surface dressing of 2 or 3 inches thick of horse droppings or decayed manure. In the event of cut-back Vines—that is, Vines one year old—being planted it will be necessary, unless they were shaken out, the roots cut back a little and repotted at the end of February or early in March, to disentangle the roots, shorten the latter a little, and then spread them in every direction over the soil with a slight inclination downwards; cover with about 6 inches thick of soil; water, &c., as set forth above.

As regards varieties, I should like to make a little alteration in the list given at page 47 of your current volume by classing Gros Maroc as a first-rate late-keeping Grape, as well as being a good midseason variety. The reason for this is that a bunch of this handsome Grape, which, as I stated in your number for November 27th last, was cut and bottled in August and kept after the crop from the same house had been consumed to test its keeping qualities, is still in fairly good condition in the Grape room, notwithstanding the fact of its having been cut nearly seven months. Hence there are good grounds for supposing that if this Grape were grown, as it should be, in a late house, and the crop cut and bottled at the usual time (towards the new year) it could be kept in good condition until the end of May or the middle of June.—H. W. WARD, *Longford Castle, Salisbury.*

(To be continued.)

DRAINING FLOWER POTS.

Now that potting is general, all who wish to excel in plant culture will do well to pay the utmost attention to draining the pots. Beginners appear to think that the more material is placed into a pot the better it will be drained; but this is a mistake, as properly arranged drainage to the depth of 2 inches in a large pot is more effective than much more carelessly placed in it. Broken pieces of pots, oyster shells, or broken bricks, form the best material for drainage in pots. All are good, but I prefer the first and second named. One large piece should be placed over the hole at the bottom of the pot; more rough pieces may be placed over this, and smaller on the surface. When they are thrown in some of them will stand on edge with vacancies between, and it is this form of bad drainage which allows the soil to fall amongst them and stop the passage of the water before the plant has commenced growth. The large potsherds should never be thrown in, but each one must be placed down separately with the hand, and arranged so as to fit closely. The smaller pieces must be spread over the larger ones, and it will then be impossible for the soil to interfere with the operation of the drainage.

In draining pots for many Orchids, or any plant which produces large fleshy roots, it is a good plan to place a little pot upside down at the bottom of the larger ones, as there is no danger of the drainage being filled when this done, and the roots enjoy working around and clinging to such material. Charcoal, too, may often be used with advantage. Drainage which is to be used again should be washed before it is returned to the pots; and apart from being clean it must also be quite dry. Bedding plants, and others that only occupy the pots for a short time, do not require such care in draining as Orchids, Pine Apples, or hardwooded plants, which will remain in the same pots for many months or years. Besides placing the larger pieces of potsherds at the bottom, and the smaller portions over them, it is a good plan to put some rough soil over this before the general soil is placed in. Plants requiring peat must have the roughest parts of this soil placed over the drainage, and those

needing loam must have the turfy parts used in the same way. Moss, especially sphagnum, is also very suitable for the purpose, but leaves decay too soon to be introduced where the plants have to remain long in the pots.—J. MUR.

SELECT ANNUALS FOR STOVE AND GREENHOUSE.

(Continued from page 191.)

THE BALSAM (IMPATIENS BALSAMINA).—This is so well known and so commonly grown that no description is requisite. It is included in the natural order Balsamaceæ, and was introduced from the East Indies in 1596. The generic name refers to the elasticity of the valves of the seed-pod, which discharges its seeds when ripe or on being touched. The genus contains upwards of thirty-six species, nearly all of which are annual or biennial; the majority are natives of the East Indies and Ceylon, and the remainder are found in China, Cape of Good Hope, Madagascar, and North America. The perennial, *I. Sultani*, is becoming nearly as popular as the annual species, *I. balsamina*; a few of the other species are found in botanic gardens, but they are not likely to become popular.

In order to have fine plants of the Balsam, say 3 feet high and as much in diameter at the base, seed should be sown about the middle of March in light rich soil in pots or pans, and placed in a warm moist place, such as a two-light frame on a gentle hotbed. If the place can be entirely devoted to the Balsams so much the better, and a piece of glass placed over the seed-pan will assist germination. As soon as the seedlings can be handled they should be placed in small pots, using slightly richer soil than that the seed was sown in. Keep them plunged in the frame with their foliage not more than 6 inches from the glass, for the object is to promote a quick and sturdy growth, and the warmth in the bed will incite a healthy and rapid root-action. Shade them from strong sunlight, and afford a little ventilation so long as the temperature can be kept above 70°. Do not allow the plants to become root-bound, but transfer them into 5 or 6-inch pots as soon as the roots are working freely round the sides. This remark applies with equal force to the future, as any check at the roots will cause a premature formation of flower-buds, and thus render it almost impossible to obtain a large well-flowered and symmetrical specimen. At this potting the soil should be rich, but neither too light nor too heavy. If the loam at hand is light, then all that need be added will be a fourth of its bulk of dried cow manure passed through a sieve, but should it be stiff and heavy in texture then a third of the bulk must be leaf soil, or, failing that, sand. Let the drainage be perfect, but not necessarily bulky. The soil on all occasions ought to be warm when used, and the plants sunk deeper at every potting operation. Keep them plunged in the hotbed, and not too close together; apply water carefully, and allow a free circulation of air according to the temperature.

Subsequently pots 9 inches in diameter may be used, and soil as before described. If there is no longer sufficient head-room in the frame, let the plants be placed close to the glass in a warm greenhouse, taking care to maintain an atmosphere as near like that of the hotbed as possible. As the side shoots develop tie them down close to the pot. It is a good plan to pass a wire or string round the pot underneath the rim, to which strands of matting can be tied from the shoots above. Occasional weak supplies of liquid manure may be given as soon as the roots have taken to the new soil. If flower buds show, keep them picked off for the present until the plants are established in their largest pots, which need not be larger than 12 inches in diameter. The soil for the final potting ought to be sound fibry loam—if it has been stacked nine months and had a layer of manure between each two layers of sods it will be just right—three parts; cow manure one part, and a dash of sand. Let the plants be potted rather firmly. Stake and tie out as the potting is completed, and return to their growing quarters. Take care to shade at all times from strong sunshine, and as the plants come into flower give them a cooler atmosphere and feed with liquid manure as they require it. Keep all seed pods picked off. Those who possess them may place a few crushed bones over the crocks at the final potting.

MIGNONETTE (RESEDA ODORATA).—Though not an annual in the botanical sense of the term, as it is easily transformed into a biennial or even perennial by encouraging growth and keeping the flowers picked off, yet it is usually grown in gardens as an annual. The genus *Reseda* is much larger than many people suppose (though few will care to make the acquaintance of any but the Mignonette) comprising thirty or more species, mostly distributed throughout Europe and Africa, one or two being found in Persia and China. *Reseda odorata* is a native of

Egypt, and was introduced in 1752, and the tree Mignonette, *R. odorata frutescens*, was introduced about the same time, and it is to this variety the following cultural remarks principally apply; but for the information of those who are desirous of having the delicious perfume of the Mignonette without too much space being occupied, it may be stated that seed sown in 5 or 6-inch pots, and covered with half an inch of soil, the plants afterwards to be thinned to three or four in a pot, will give very satisfactory results. If wanted in flower in autumn the seed should be sown at the beginning of June; if not before winter or the following spring, the months of August and September will be soon enough. If the plants are grown in a hotbed until winter sets in they will be all the stronger and better. The chief elements of success are perfect drainage, rich but porous soil, full exposure to light, and regular, but not extreme, supplies of water.

To obtain large specimens of the tree Mignonette, the seed may be sown at any time from the middle of April to the middle of June (I generally sow the seed at the beginning of June, but I would advise amateurs to sow a month earlier) in small pots, using two parts fibry loam and one part dried cow manure or spent Mushroom-bed, with a little sand. Place the pots on a gentle hotbed, and within 6 inches of the glass, and as the seedlings appear remove all out but the strongest, and leave this as near the middle of the pot as possible, ventilating on favourable occasions to encourage a sturdy growth. About the middle of June they will be ready for repotting, and if the seed was sown in 60-sized pots the plants may be transferred into those 5 inches in diameter, but if it was sown in pots $4\frac{1}{2}$ inches in diameter, then 6-inch pots must be used for this shift. Let the compost be as before, with the addition of a little charcoal broken to the size of horse-beans, or a few crushed bones. Replace them in the frame and ventilate freely. Care must be taken in watering until the roots have obtained good hold of the new soil, and a dewing overhead in the evening of warm days will be very beneficial.

As the lateral shoots are developed they should be tied outwards and downwards, great care being exercised in the operation, as they are liable to break off at the junction with the stem; the points of the shoots should also be pinched out occasionally to keep the plants bushy and symmetrical. Care and attention in staking and tying is requisite at all times. At the beginning of August the plants will be ready for the pots in which they are to remain; these need not be more than 9 inches in diameter, and the soil recommended for the previous potting cannot very well be improved for this. If it is possible to accommodate them with a cold frame until the middle or end of September it will be greatly to their advantage, and to allow more head-room the frame may be raised on the requisite number of bricks. The lights should be kept closed for a few days after potting until the roots begin to ramify in the new soil, after which an abundance of air should be given. At the end of September they should be moved into winter quarters, which ought to be warm, light, and airy. As the pots become filled with roots liquid manure may be applied with advantage. By these means specimens may be obtained 3 feet high and the same through, and when so grown few things are more attractive to the eye or more creditable to the cultivator.

SCHIZANTHUS.—A group of beautiful and not commonly grown annuals are the species of *Schizanthus*, a genus introduced from Chili during the years 1823-1832. *Schizanthus pinnatus* is sometimes met with in the open border, but its beautiful congeners, *S. Grahami*, *S. Hookeri*, and *S. retusus*, are very seldom seen, a reason for which it would be difficult to find, unless it be that they are too easily grown. *S. retusus*, *S. Grahami*, and *S. Hookeri* will vie with many Orchids for beauty, and will hold their own for floriferousness; therefore those who do not know the plants should give them a trial. For flowering during summer sow the seed in pots in the same way as recommended for early Mignonette, giving the same general treatment. Only allow one plant in a small pot, and keep giving them more root room until they are as large as desired; or three plants may be transferred from 4-inch pots into one 9 inches in diameter. Keep them staked and tied to prevent breaking.

If it is desired to flower them early in spring the seed ought to be sown the previous autumn in the same way as before, and be kept in a cool greenhouse during the winter close to the glass to prevent a weak growth. Pot them and tie the shoots down as often as requisite after the turn of the year, and keep them close to the glass, but safe from frost. Care must be exercised in watering during the months of November, December, and January.

SENSITIVE PLANT MIMOSA PUDICA.—Many people are very much interested with the Sensitive Plants, and if all who

possess a greenhouse knew how easily they can obtain one of the most sensitive of the class, few would be without it. *Mimosa pudica* is the plant referred to, of which seeds may be sown in spring at the same time as other tender annuals, and the same soil and general cultural details will suffice. The family is somewhat extensive and is closely allied to the *Acacia*, belonging to the large natural order *Leguminosæ*. The genus is of wide geographical distribution, being found in the East Indies, Madagascar, Africa, West Indies, Brazil, and Peru. *Mimosa pudica* was introduced from Brazil in 1638.

VARIEGATED MAIZE.—I cannot close my list of select annuals without drawing special attention to an annual that, from a decorative point of view, may correctly be termed a foliage plant. I allude to the Variegated Maize, *Zea japonica albo-vittata* or *variegata*. Its cultivation is very simple. Seed should be sown at the end of March or beginning of April in light soil, and be placed in gentle heat as recommended for the other annuals. As soon as the young plants are large enough to handle they may be potted into small pots, using a compost of loam and leaf mould in equal proportions, and returned to their growing quarters; maintain a humid atmosphere and do not allow them to suffer from drought at the roots. In several weeks they will be ready for moving into 6-inch pots, using the same soil as before, because if the soil be made too rich a more vigorous growth will be obtained at the expense of the variegation; but if it is not particularly desired to have the variegation as clear as possible, then a little manure may be added to the soil with the addition of some sand. Keep them growing, and let them have an abundance of light, syringing them on fine days. As soon as the roots reach the sides of the pots the plants should receive their final potting, using the same soil as before. As the Maize requires a good supply of water, it is essential to drain the pots efficiently. When the plants are too tall for the frame, which they will be after their last potting, they will thrive well in the warmest position of the greenhouse.

When they have attained the height of 2, 3, or 4 feet they form very graceful objects either in the sitting-room window or the conservatory, giving an additional charm of form and colour to the occupants. They are also valuable for groups in the exhibition tent.—J. U. S.

THOUGHTS ON CURRENT TOPICS.

At last Mr. Iggulden has met his critics. Admittedly the statement of his case was faulty, and "Vitisator" opportunely came to the rescue. Yet, notwithstanding, Mr. Gilbert remains a surface-scratcher, and Messrs. Miles, the Thomsons, and all the rest of successful cultivators, have wasted their labour in deepening the fertility of the soil. Supposing such men have been "radically wrong," and your correspondent has found out the right way, he will be entitled to be regarded as the horticultural Mahdi. Is he destined to be "smashed?"

HAD Mr. Iggulden been sufficiently careful in stating his case, and confined his remarks against trenched to such land as he has to work, I, for one, should not have entered the witness box against him; but, at the same time, it is better as it is, inasmuch as a subject of such deep and wide importance would not otherwise have been so thoroughly discussed. It is very pleasant, too, to feel that the controversy has been conducted in such an excellent tone, all the opposition having been evidently of a friendly nature. This is as it should be, for it is only then that discussions can be agreeable to general readers and profitable.

It is not my desire to dwell tediously on this subject, but an opportunity offers for observing how easy and unsafe it is to found an argument on assumptions. When I instanced a case in which deeper landworking than before had proved markedly profitable, our Mahdi somewhat hastily prophesied that this was the result of a hot, dry, and particularly favourable season for vegetables; whereas, in the district alluded to it was precisely the reverse, as for weeks not a drop of rain fell, and the land is light, resting on gravel. Again, he takes it for granted that my allusions to a higher rental attending deep culture referred to "Fulham and the neighbourhood." I was alluding to a district where the produce cannot be conveyed to London and manure had in return at a less cost than is incurred in transit to and from Essex. Yet in one case the rents have increased 100 per cent. in value as the result of deep working and high culture, while during the same time they have fallen in Essex, and at present it is estimated that 75,000 acres await occupiers in that county. Exceptional prices of past years for Broccoli or any other crop go for nothing now. We have to deal with the present and general results, and these, I regret to say, are for not a few landowners deplorable. It is quite possible that there are certain tracts of land in Essex that it would be a mistake to trench 2 feet deep "all at once," just as it would doubtless be to trench the garden which Mr. Iggulden works so well in a similarly unreasonable manner; and I am as firm a believer as he is in firm or even hard, soil for Broccoli; but the fact, I think, remains, that the larger the larder the more food it contains, and if the Fulham growers, with all their manure, only dug the lard one spit deep they would

instead of having to pay heavy rents, soon be bankrupt. This they know very well, or they would not expend so much in labour.

Your correspondent does not strengthen his case by committing me to a principle admitting of no qualification—namely, in being “confident that fruit trees need a deep root run.” I do not complain at all of an opponent making a mistake of that kind, because I always regard it as a confession that the basis of his argument is a little shaky. I have said plainly enough that many fruit trees in the deep rich soil of gardens—trees that are subjected to excessive pruning to “keep them dwarf,” have too much root-power. I think, perhaps, most gardeners know that; but I am also convinced that the best fruit that comes to the markets in tons, not to speak of the magnificent specimens that win prizes at exhibitions, is not the produce of trees growing in soil that is only a foot deep, or simply prepared with the plough. It is in a large measure due to the want of thought in choosing land for orchards, then in its niggardly and faulty preparation, that enable cultivators to send fruit 4000 miles to market and sell it at a higher price than is realised by the ordinary bulk of home-grown produce. The Apples, for instance, from trees grown in the deep alluvial soil of American orchards are in every way superior to those grown in poor soil in this country, but not better than the produce of trees in generous soil in Kent, Surrey, Sussex, Somerset, Hants, Berks, and other counties. That I am told on the authority of a large fruit salesman is a fact, and it may well be pondered over by the advocates of fruit culture on the starvation system.

PERHAPS I can finish what I have to say at present in another paragraph or two, in which I am vain enough to think that I can adduce authority worthy of respect as to the wisdom of having a depth of nearer 2 feet than one foot of good soil for the cultivation of fruit. I must first, however, remark that Mr. Iggulden has admitted that Vines do not need a deeper border than fruit trees generally, and that for the former a foot is sufficient if on ordinary subsoil. Observe, I do not contradict your correspondent on this matter, but simply mention it, and now turn for a moment to two or three practical men, not fruit-fanciers with fads, nor regardless-of-expense individuals.

FIRST I call on Mr. Bunyard, who is no advocate for heavily manuring ground for fruit trees, but he advocates land-preparation as follows in his pithy work “Fruit Farming for Profit:—“In order to save expense fruits are frequently planted in holes, which of course is the only plan on grass, but the cultivator would be amply repaid by having all land intended for plantation either steam-cultivated or trenched.” That is clear enough. Now I turn to Mr. Whitehead’s pamphlet, “Fruit Growing in Kent,” which Mr. Bunyard refers to so approvingly. Mr. Whitehead, in referring to the formation of orchards intended for grass, says, “It is found in practice to be best to plant the trees on well trenched land,” and goes on to say that he has “planted Lord Suffield Apple trees on grass and cultivated land at the same time, both being manured in the same way; those on the cultivated land grew away from those on grass in a remarkable degree, and bore fruit the second year, while the others did not bear for three or four years.” In case these authorities are not good enough, I will venture to quote one whom Mr. Iggulden seems to believe in—namely, himself. Not long ago, in referring to preparing borders for Peach trees, your correspondent excavated to a depth of about 30 inches, and provided 2 feet of soil, about a foot of the best of the old placed at the bottom and 18 inches of fresh above it. I daresay he remembers doing that. And again, in an excellent article against large fruit borders, he stated “No mistake can be made in a border for Peaches 6 feet wide and 30 inches deep, with 9 inches for drainage; and for Grapes about 3 feet wide and in other respects similar.” He can fairly plead that was right under the circumstances; but his denunciation of trenching practically ignored circumstances; it was to all intents and purposes a sweeping condemnation of a practice which, rightly conducted, is one of the most profitable operations in gardening. I shall believe the old masters, the successful gardeners that have been referred to, were right, and that if they had adhered to shallow culture they would never have become famous.

Now to Grapes again. I am glad to find that Mr. McIndoe has such a high opinion of Madresfield Court. Produced in its best condition, I consider it excels all black Grapes for autumn use. But the point was his insistence of a different standard for judging the Gros Maroc, which amounted to this—if not late it is good for nothing. I have had it very good after all the Madresfield Court grown in the same house were shrivelled, and when the Black Hamburgs have lost their colour; and, by what I have seen, I have a strong impression that it will prove a better black Grape for Christmas use than either of those varieties. That was rather a trite observation of a gentleman who knew all his guests had eyes but was not so certain about their tastes. Appearance counts for a good deal nowadays, hence the popularity of Gros Colman, which is only met with occasionally of high quality, or, say, equal to Gros Maroc.

I AGREE with Mr. D. Thomson and “Non-Believer,” that Black Hamburg can be had in excellent condition for at least a month after September, as I have cut hundreds of bunches with which no fault was found right through October. I have had them good in November, and often kept them till Christmas, but they had then usually lost much of their colour and briskness. I further once saw a wonderfully fine lot of bunches in January, which were sold, I think, for 4s. 6d. a pound. But if you want this Grape to keep so very late—at least, keep its colour—it must not be ripened in July, or August either, except, perhaps, in duller

and wetter localities than I have fortunately had to work in. I think that is enough about Grapes at present.

I AM glad to find Mr. Bardney and I do not differ on the question of potting Roses in October and flowering them late in the following spring. Perhaps he will not quite so readily admit that they may be potted in November and produce fine flowers in the following April; but they will do so, and the plants may be eventually planted out, potted in the autumn, gently forced again, and so on. That is the easiest plan of obtaining Roses a month before they flower outside, and for such a purpose, which is the object of many, I should never think of keeping the plants in pots for a year in preparation; but for flowering in March or earlier the case is different. I may add, my note was not so much critical as supplementary, and intended to meet the circumstances of lesser men than your able correspondent.

I SOMETIMES think “D., Deal,” is a melancholy man, sometimes the reverse; in fact, after reading him for years I hardly know what to think. He does not, however, disguise his troubles, and when I see one of his articles I generally look out to see what is the matter. Still, I have gained many a serviceable hint from him, and the last is on cutting the corms of Gladioli. I have had to grow these flowers for years, not for my own pleasure, but for somebody else who was determined to have them, and would not give them up. We bought and bought, and lost and lost, till the case seemed hopeless. At last I commenced saving and sowing the “spawn.” The sorts got mixed no doubt, but that saved labelling, and I ever afterwards had as many spikes as were wanted, and numbers to spare. The small cormlets were sown thinly in drills a foot apart, just, as your correspondent says, like sowing “Onion seed,” and there they remained until there was a good sprinkling of flowers, when the whole were taken up in the autumn and in due time planted. I had no more trouble after adopting that system in maintaining a supply of spikes. As to top-dressing in heavy soils, such as Mr. Dobbie’s, it would scarcely be needed, but in light and dry soils I have found it very advantageous.

MR. H. S. EASTY has noticed, in my opinion, the chief merit of the very much debated vegetable Chou de Burghley—namely its lateness in “coming in when greenstuff is getting scarce.” That is exactly what it will do if not raised too soon. It is a mistake to sow in March as if raising Savoys for autumn use, as the plants then get too large and are often coarse; but sown in May they are handy for planting either between or after early Potatoes or other crops, are dwarf, compact, and firm—valuable after Brussels Sprouts are over, and bridging the unpleasant blank that often occurs between winter Greens and spring Cabbages. That is what I think about Chou de Burghley, and it is good into the bargain.

BOTHER the trenching; it has taken up so much of my time and paper that I cannot dwell on some other topics of the time as I had intended. I meant to have said something about Orchids, amongst which Mr. Castle appears to have been spending such a happy time. He seems to know a good deal about these remarkable plants, but I doubt very much if he has killed so many of them as I have. My experience with them commenced just thirty-five years ago. At that time the very name of Orchid suggested a Pine stove temperature and any amount of steam. The result was that Phalænopses grew like weeds—or rather like Mr. Philbrick’s; Dendrobiums did not flower, and Odontoglossums, Oncidiums, Cattleyas, &c., “went off” wholesale. There was not much to help us in the gardening papers then, for the sufficient reason that the conductors and writers were in a fog about Orchids, and the plants followed suit. But the time came—how times change!—when we could grow Orchids in frames in the summer unheated except by the sun, and winter them in houses with a temperature of 50° or less. Hence the spread of these interesting plants with their quaintly beautiful flowers. Small pots, sweet soil, temperate heat and regular, pure air with genial moisture, not parching droughts, are what Orchids like; and any intelligent cultivator who can provide those simple requirements can grow them, even perhaps as well as those represented in that magnificent house at Veitch’s, which ought to be seen by—
A THINKER.

LYCASTE SKINNERI.

FOR many years this fine old Orchid has most deservedly been a great favourite in gardens, and its popularity appears to be fast extending. The flowers are showy and extremely durable, the latter a recommendation which plant-growers can fully appreciate, and its culture being now well understood, it is not surprising that *Lycaste Skinneri* has taken so high a place. In recent years, too, numbers of varieties have been obtained, the flowers most diversely tinted, from the richest crimson through all gradations to the pure white alba, which has realised such high prices and still commands from 10 to 20 guineas for a specimen of moderate size. In some the sepals and petals are white or of a very delicate pink hue, while the lip is intense crimson—a most pleasing contrast. The flowers also are now so large, of such wax-like substance, and so beautifully formed, that there is little room left for further advancement.

One of the best grown specimens for the size which we have ever seen

was that from Mr. Walter G. Gaiger, gardener to S. Taylor Whitehead, Esq., Burton Closes, Bakewell, which was shown at the recent meeting of the Royal Horticultural Society, March 10th. This plant, which was grown in an 8-inch pot and had three growths, with nineteen flowers, were of a very delicate rosy colour, one of the prettiest varieties that have been exhibited. The Floral Committee unhesitatingly awarded a cultural commendation for the specimen, an honour that was well merited, as it afforded most satisfactory evidence of the grower's skill. From a photograph of the plant, kindly forwarded by Mr. Gaiger, we have had the accompanying woodcut (fig. 42) prepared, and it gives a faithful representation of the specimen as it was shown at Kensington. No doubt many gardeners would be glad to know the method of treatment which

"Many men," "T. C. D." says, "do not utilise their spare time to the best advantage" in studying, drawing, reading, &c., and he enforces my charge of superficial reading in these words: "I do not mean scanning, but studying and taking note of what we read." To which I say, Very good indeed, "T. C. D." 4, A warning against profitless amusements. 5, An exhortation to the excellent resolution to always resolve to do better. A very wise and sensible letter, and to me very satisfactory, as may be judged. There have been others in much the same strain running through the year's correspondence.

Much of the censure so freely dispensed towards those who have exposed the young gardeners' weaknesses (and yet who are, perhaps, thereby better friends than those who are always saying smooth things about them) has been given because the writers could not or would not recognise the logical law that the whole contains the particular, but the particular



FIG. 42.—A SPECIMEN LYCASTE SKINNERI.

has yielded such pleasing results, and probably Mr. Gaiger will be equally as ready to furnish the information.

THE YOUNG GARDENER QUESTION.

I HAVE been very greatly amused by the correspondence on this subject, which I did something to stimulate at the end of 1883. If I wanted anything to justify the position I took up as to the professional degeneracy of the young gardeners of the present day it would be the letter of my brother of Herts, "T. C. D.," on page 206. He, though ostensibly defending the young gardeners, yet practically admits the truth of all the weaknesses that they are charged with. Take the charges which he says may be laid to them. 1, Impertinent answers when corrected for wrong or imperfect work. This was a weakness that I did not bring against young gardeners in my charges. There's truth in it, for all that. 2, The necessity to do things thoroughly. 3, The economic use of spare time.

does not contain the whole. I have as many and as close friends amongst young gardeners as any head gardener of fifty years of age can have. It was because of the interest I had in these, and a wide and intimate observation of the class, which made me write as I did at the end of 1883. I can only say that if this discussion has served to open the eyes of only a few young gardeners, it will not have been in vain. As to the hard words that have been directly or indirectly said about motives and judgments, they are nothing—I am used to them, and, as a Lancashire man said on being commiserated with on his severe asthmatical cough, "Oh, it's nowt when you're used to it!"—H., Notts.

MR. BARDNEY'S INSECTICIDE.

In the "Gardener's Year Book" you give Mr. Bardney's recipe for softsoap solution as follows:—About 2 lbs. of soap in a saucepan with a little water, boiled for about twenty minutes. This is mixed with 5 or 6

gallons of water. Half a pint of the solution is put in a large water-can of water and used for syringing. I have often used this mixture, and can vouch that it does injure the blooms of Tea Roses and of such Roses as John Hopper. In last week's Journal Mr. Bardney advocates a mixture much stronger, and assures us that it will not damage the blooms. I repeat Mr. Bardney's last version for comparison:—"4 lbs. of softsoap oiled in a quart of water for twenty minutes, and then mixed in a vessel containing 4 gallons of water. Half a pint of the solution is stirred into each 4-gallon can of water every time syringing is done." This is twice the strength of the "Year Book" recipe, and even that I have found too strong.—T. C. CLAYTON.

[I am obliged to Mr. Clayton for his criticism, as it will, perhaps, enable me to suggest the cause of the injury to which he alludes, and I shall have no difficulty in showing that he has not demonstrated any inconsistency on my part, while the difference in the quantity of softsoap and water mentioned in the "Gardeners' Year Book" is clearly on the side of safety.

In my last version I did not recommend double the quantity of softsoap to be used for syringing Roses as a preventive against mildew that I have previously advised. On the contrary, I advised the use of exactly the same solution that I have myself been using for the past seven years, and the same recipe that I have recommended for some years in the pages of this Journal. I believe the first time I gave the recipe was in the leading article (page 497) of the issue for December 25th, 1879. If Mr. Clayton will turn to the page given he will there find that I recommended 2 lbs. of softsoap to be boiled and mixed with four gallons of water, and one pint to be used in each large canful of water at syringing time. In the last version I advise the boiling of 4 lbs. of softsoap to be mixed with the same quantity of water, but only half a pint of the solution is to be stirred into each four-gallon can of water used for syringing. Perhaps your correspondent will point out the difference between the two recipes? In reference to the "Gardeners' Year Book" I have only to say, the recipe there given is a safe and a reliable one, and those who put it into practice will never condemn the "Year-Book" for containing it.

The softsoap that I use is of the best quality only. I have seen some that I would not accept as a gift. Some qualities of softsoap quickly chap the hands if washed in it, but the soap I use will not do so. Past experience confirms me in the belief that some qualities contain injurious ingredients. Does Mr. Clayton think that if the solution I have used over the period named would injure the blooms of Roses that I should continue to use it daily and advocate its use in these pages for the benefit of your readers? I should not, but on the contrary, should as strongly condemn it as I have recommended it.—WM. BARDNEY.]

SOME GOOD PERENNIALS AND THEIR PROPAGATION.

THE WHITE EVERLASTING PEA.

THIS is a very old inhabitant of our gardens, and one which has adorned the porch of many a country cottage home, and may do so still, though in fewer cases than in days gone by; and it is among the best and most useful of perennials. It seeds freely, and what need is there for any lack of so useful a plant? We have few plants which produce white flowers in greater abundance than this, while for durability it will also vie with many; the flowers are as freely cut as produced, and seeds are not as a natural consequence forthcoming. It is not one of the easiest plants to increase in other ways. In dividing the plants, unless the stools are large the operation is attended with some difficulty, and must not be taken too hurriedly in hand. I do not like dividing them at all, for when planted out the long white roots descend to a great depth; and as these are too brittle to be coaxed in any way, they have either to be cut or go into much larger pots than they really require.

Those who possess large roots and are desirous of increasing their stock cannot do better than lift the old plants at once, pot them, and place them in the greenhouse. In potting allow the crown to stand higher than usual. As the shoots are produced and attain a length of from 3 to 4 inches they should be stripped off with a heel attached, which with the crown well above the surface will easily be accomplished. Insert these in sandy loam, and if possible accommodate them with a gentle heat, and keep them close under the handlights, and they will form roots in about fourteen days. I prefer not using a knife, as by so doing that portion of the heel which emits roots most freely is invariably sacrificed. In this way the stock may readily be increased, and it would be difficult to have too many of so desirable a plant. I need hardly refer to its adaptabilities, since it is naturally a suggestive plant. One position I might mention for which it is well suited, and this is planting it at the foot of some half-dead or disfigured Wellingtonia, and allow it to ramble at will amidst the branches. Thus placed it is very pleasing, and is in fact only placing it in similar position to that occupied by the typical plant *Lathyrus latifolius*, which is found wild in woods.

THE DOUBLE WHITE CAMPION (*LYCHNIS VESPERTINA PLENA*).

If among the whole host of perennials there is one plant whose propagation is considered difficult, or so little known and understood, it is this *Lychnis*, in which particular it differs from all the other members of its genus. Truly it is the most difficult of all perennials in this respect, and one which has proved troublesome to most hardy-plant propagators; and I have heard some pronounce it impossible to strike it by means of cuttings. Fortunately several years ago, after previous difficulty with it, I closely watched its growth and progress, and was not long in dis-

covering what has since proved the secret of its propagation. Up to this time I had tried various sorts of cuttings and always failed, and I doubt not that many others have similarly failed. The cuttings I had employed were such as could be had in early autumn, all of which contained flower buds, and were useless. They were, in fact, laterals taken from the flowering stems, and were in consequence somewhat woody. If stock is to be had this season it must be taken in hand at once, carefully lifting the plants if in the open ground, and introduce them into a warm greenhouse, where a temperature of from 50° to 60° is maintained. If the existing stock is established in pots so much the better. As fast as the shoots are produced they should be removed with a heel attached, inserted in sandy loam in well-drained pots, and covered with bellglasses. Well water them in, keeping them close and shaded from the sun. Though I have rooted them on a rather strong bottom heat I prefer having them on a bed of coal ashes in the temperature above named, and where the bottom is comparatively cool. In three weeks from the time they were inserted the majority will have formed roots, when the glasses may be removed. If, however, they are allowed to get hard at the base they will take much longer to root. In this way I have rooted it by the hundred. As soon as ready the young plants may be potted, and in due course removed to cooler quarters and gradually hardened.

It is most difficult to increase by division, and should only be taken in hand by the experienced, and even then the results are anything but satisfactory. I have also tried it by means of root cuttings, but without success; indeed, I have tried every means I could think of, and I am convinced that radical cuttings inserted in March, and as early in month as possible, produce the best results.

The late Rev. Harpur Crewe had a remarkably fine specimen of this *Campion* 3 feet through in his garden at Tring some years ago, and which is much the largest plant I have seen. It was covered with its pure white slightly fragrant blossoms, and was in itself a feature. As a summer and autumn flowering perennial it has no equal, and but for the difficulty which has hitherto been experienced in its propagation would, no doubt, be among the most popular of plants. It delights in a deep well-enriched soil, and when in good condition I have known its earliest blooms to measure nearly 2 inches in diameter.

STOKESIA CYANEA.

This is another plant holding a high rank among late autumn flowering perennials; so late, in fact, that unless planted in light warm soils in favoured positions it does not expand its flowers. It is worth every attention, however, in this respect, and it is almost if not quite unique in its profusion of lavender blue flowers some 2 or 3 inches across during the month of October. When the soil is cold or stiff it is best grown in pots plunged in ashes during the summer, when it may be introduced into the cool greenhouse, there to expand its blossoms. It grows 2 feet high, and is in all respects a first-class perennial.

It is not easily increased by division owing to the tufted or conglomerate growth on the rootstock. So closely are they packed in, that they cannot be separated without considerable sacrifice; it is, however, readily increased by root cuttings, and as roots may be had in plenty there is no reason why so good a plant should not be more generally grown. This may be accounted for in a measure by its lateness in flowering, when visits to nurseries are less frequent than in the spring and summer months. By lifting a single plant and selecting some of the strongest roots a good stock may be secured; cut the roots into lengths of 2 inches or thereabouts and insert them round the inside of pots in sandy loam, leaving the top just visible. By placing them at once in brisk heat good plants may be secured by the ensuing autumn. In two or three weeks or less time, according to the heat they have been subjected to, they will commence to break freely from the apex of the root cutting, and when of sufficient size they should be moved to a cooler place, subsequently potted and hardened. This attractive Composite was first introduced from Carolina about the middle of the last century.—J. H. E.

POWDERHAM CASTLE.

THE title Earl of Devon or Devonshire seems almost coeval with the first settlements of the Saxons; for was it not Orgarius Earl of Devonshire, and his herculean son Ordulph, who founded and completed the Abbey of Tavistock in the middle of the tenth century? But it was not till 1325 that the Courtenays became the owners of Powderham. They acquired it by an alliance with the de Bohuns, as afterwards they acquired Okehampton, most picturesquely situated of all the Devon castles, by one of the family, Reginald by name, marrying the heiress of all the Redvers. After the Norman Conquest the manor of Powderham was given to William de Ou as a reward for his help in the work of invasion.

Those of the family who have "lapsed" and suffered "the slings and arrows of outrageous fortune" may be mentioned in Thomas the sixth Earl, who, although at first with York, joined the cause of Henry VI., and was beheaded on the snowy field of Towton; John, the eighth Earl, who fell at Tewkesbury; Courtenay, Marquis of Exeter, of the blood Royal, for he was the son of Katherine, daughter of Edward IV., who was doomed to the block for a very uncertain share, and by mere hearsay, in the Pole conspiracy by Henry VIII. and Cromwell; and lastly, so as not to swell the list, the luckless and foolish youth who was proposed for the Consort of the Virgin Queen. This Castle of Powderham was a building in the palmy days of the family—viz., the end of the fourteenth century, when a Courtenay was Archbishop of Canterbury, and unremitting in his efforts to eradicate Lollardism from Oxford, and when a Courtenay was standard bearer to Edward III.

Of the original building but two towers remain. The changes and

additions, however, are all of the castellated order of architecture, and even now it smacks somewhat of a "frowning keep." The situation is a low one, and on one side the ground rises steeply. This elevation is on the west side of the Castle, and the view from a Wellingtonia, which is 74 feet high, and 15 feet 6 inches in girth 3 feet from the base is very fine. At your feet is the deepening stretch of greensward, flawlessly planted. In the hollow are the turrets, some of them Ivy-clad, of the Castle. Many of the trees here deserve mention. A tall drooping *Abies morinda*, with one or two of the pendulous branches over 5 feet, is both imposing and attractive. A variegated *Wellingtonia* was also very pretty in September. Contrast is afforded by *Pinus insignis*, *Taxodium distichum*, and *Thuja occidentalis pendula*. On the north and east side there are Cedars of Lebanon close up, an avenue of them. On the east side also is situated the flower garden, which is cut off by a battlemented wall from the park. The bedding-out was extremely well done; the designs were graceful, and the colours very diverse.

The park has a very undulating surface, and is thickly planted not only with deciduous trees but also with evergreen Conifers. The *Wellingtonias* may be set down as a failure, and are getting brown and weary-looking. This is most likely owing to the shallowness of the soil. The tall one mentioned above is, however, still vigorous. The Lebanons and *Cupressus macrocarpa* are thriving excellently. Another failure, but in this case more in the pleasure grounds, is *Picea Pinsapo*. Mr. Powell, Lord Devon's head gardener, attributes their sickly condition to a severe winter coming between two dry seasons. The highest eminence in the park is called Belvidere. Upon it has been erected a tower as an observatory. The view from it covers a wide stretch of country in every direction. Southward can be seen the broad river of Exe and its confluence with the Channel. By its banks are rich meadows and verduous parks, notable among the latter being Nutwell Court, the whilom residence of "Franky Drake." Northward are the towers of Exeter and the historic village of Topsham, which furnished more ships in the formation of the fleet to withstand the Armada than any other port except London. Westward are the wooded heights of Haldon. The panorama thus includes hills, sea, broad river, and busy town; and immediately below is as noble a park as mortal ought to covet.

If you start from the castle and keep along above the site of the kitchen garden you come to a part of the grounds that is quite Devonian. It is a series of drives through lofty Beech woods. Branching off at a distance down of some 200 or 300 yards, quite a different scene is entered. A slow-flowing but gleaming river glides peacefully by mossy lawns. Overhanging the water, and dabbling their lowest branches in it, are Cedars of Lebanon that have warred with the elements long and triumphantly. The lawn slopes up to the high Beech woods and carries on its sustaining soil many a clump of *Rhododendron* and the "airily climbing Fir." There is nothing so neat, and perhaps nothing so pretty, as such a scene as this. It is, moreover, a pleasing haunt to the herons.

Taking the trees separately, for this part of the grounds is rich in interesting particulars, I will first touch upon the Conifers. The tallest is a Douglas Fir 104 feet high and well proportioned throughout. The next in point of altitude is a *Picea cephalonica* 74 feet; and close adjoining to it is a *P. Nordmaniana* that bids to beat at the finish, notwithstanding a long start. And, finally, on this subject, can there well be a prettier foliaged tree than *Taxodium distichum*? There are two or three large specimens at Powderham, and one at the fort of a Purple Beech was indeed a bringing together of opposites. Other deciduous trees on this lawn by running water were the Spanish Chestnuts (which tree is planted more than any other in this corner of Devon), and a very old Tulip Tree. More shubby plants were represented by *Magnolia purpurea* and the *Camellias*. Some of the bushes of the latter are 150 years old, and one is even 21 inches in bole. They were originally brought here by Sir Joseph Banks, and are perhaps the best examples of *Camellias* growing in the open air to be seen in England. A most noticeable feature are the *Eucalypti*. The best specimen of *E. coccifera* is 62 feet high; the girth is 9 feet. It is a branching tree and well set with flower buds. On the ground at the base are spread out the peelings of the bark. Where the bark is shed the wood has a peculiar polished appearance. The old seed vessels, which are very aromatic, linger for a long time on the tree. This noteworthy *Eucalyptus* is forty-five years old. In the vicinity Mr. Powell has planted a number of the other varieties. Many are doing well, and will carry on the memory of his name long after he has left this scene of his sedulous attention. The very young trees, however, succumbed to the winter of 1881.

A sweetly pretty nook is the "Grotto garden." It is a semicircular parcel of ground. The circumference is on one side Chestnuts, and on the other Beeches, with Conifers and showy border shrubs at their feet. The said grotto cut in the old red sandstone forms the pole. *Camellias* and blue *Hydrangeas* are planted out, as likewise is the Spanish Furze. The lawn in the interior is cut up by numerous tropical beds *au Wildsmith*. *Abutilon Thompsoni* especially obtruded itself into notice. The *Dracenas* and the *Phormiums* are evidently in a site according to their tastes, and some of the former were gracefulness itself. But from all this pleasant environment the eye turned with lively satisfaction to a splendid old *Pinus sylvestris*, the lower branches of which were gently grazing the lawn. It is a very uncommon thing to see a Scotch Fir with the branches so low, or one so near the model of the fashionable lawn species of Conifers. As Devonshire is all heights and hollows, there is a pretty view from this rather high ground over Kenton church to the glades of Mamhead Park. The kitchen garden is close adjoining, and walks through shrubby ground lead to it.

This part of the establishment is modern enough. The fruit trees by the side of the path are mostly young bushes or pyramids of Apples on the various Paradise stocks or Pears on the Quince, and the trees on the walls are comparatively young and recent-looking. Nearly all the Peaches are standards, for dwarfs do not succeed nearly so well in this soil. This is a rather peculiar fact. As regards variety, nobody could help being impressed by the high colour and large fruit of Sea Eagle and Dymond. The trees of Marie Louise Pear, growing on the walls, were not bearing a full crop; but the size of the fruit was extraordinary, and quite unnatural. Mr. Powell, who takes a great interest in hardy fruit, and frequently shows collections, has planted over 100 varieties. Little trees on the Paradise bearing heavy crops were Winter Majetin, Mère de Ménage, Golden Noble, and Roundway Magnum Bonum. The Versailles variety of Red Currant cannot

be surpassed for late autumn. The berries are large and plump, and will hang on the bushes as long as other varieties often will on north walls.

There are frequent Rose borders in this garden, and some of the paths are lined by showy annuals and perennials. The *Scabious* in particular afforded a great variety of colour. Large patches of Christmas Roses are forced just as they stand in the ground, and on these plants the greatest reliance is placed.

The glass houses are extensive. Grape-growing is good both in quantity and finish. The laterals are stopped at the second eye from the bunch. The plant houses are most tastefully arranged, and one, which is quite a large conservatory, is very well managed. The centre is taken up with *Camellias* standing in cement-covered brick basins. All over the roof is a most pleasing display of trailing plants. The branches of a large *Bougainvillea* are allowed to hang down, and it is seldom touched with improving fingers. *Cantua dependens* is represented by an extremely vigorous plant. The soil for it is prepared, and contains mortar and rubbish instead of peat.—C. A. M. CARMICHAEL.

PATENT VENETIAN FLOWER AND FRUIT HOUSES.

MESSRS. SKINNER & BOURD, Stokes Croft, Bristol, have obtained a patent for a house bearing the above name, of novel construction, the special object of which is to provide the means of thorough ventilation. The roof is of curvilinear form with a number of sashes arranged in a parallel manner, pivoted on to the main vertical bars at the side, and each connected separately by its upper end with a chain extending from the bottom to the top of the house under each series of sashes. By the means of a screw bar working in a cogged wheel at the base these sashes can thus be readily opened to any extent, either partly, as in fig. 43, for ordinary ventilation, or vertically, as in fig. 44, thus affording full exposure to the weather. The advantage of this is evident in the case of

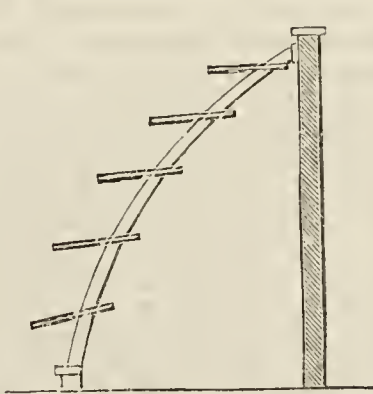


Fig. 43.

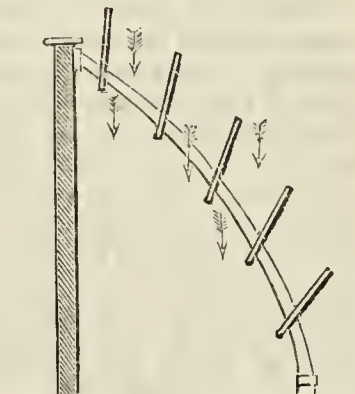


Fig. 44.

fruit trees planted out, and which cannot usually be suitably exposed except with considerable labour and inconvenience. Messrs. Skinner and Bourd also state that "one or any number of the sashes may be readily disconnected so as to remain closed if required."

The houses are constructed with special reference to portability, and they can be quickly taken down and erected in another position.

ABOUT AURICULAS.

I HAVE just finished working among Auriculas for the present; and the work was a labour which yielded much pleasure, as the plants give promise of a good bloom, and we had the farther pleasure of a very good supply of offsets to take from some rather scarce sorts. A George Lightbody gave half a dozen, an Acme double that number, from Sylvia two offsets were secured, and on Conservative two sturdy little offsets were left for a few weeks to gain a little more strength before removing them to establishments of their own. The latter is showing a good truss, which will give us at least five good pips after undergoing a thinning process. That is very satisfactory for a new variety which reached us only nine months ago in a thumb pot. I have every expectation of this plant yielding six more offsets at least by next spring. It is not a strong grower, taking after George Lightbody, Lancashire Hero, and others of that type.

I am more impressed than ever with the ease that Auriculas can be grown, and even increased, if the right method is adopted. Many of the offsets which we have taken this spring will make good flowering plants next year, our plan being to keep them in a cool house in preference to frames until the young plants are well established. The strongest are placed in 3-inch pots during the summer, and in these they become useful flowering plants by the following spring. Some of the small plants which were somewhat root-bound in 2-inch pots have been repotted now, as it is found that it is much better to do this when they

require it than to wait for a general repotting. These plants will go on now without check, and may probably want shifting into 4½-inch pots during summer.

While on the subject of offsets, I may refer to the system I have adopted for the past two or three years in order to increase stock of some sorts. I used to behead the plants, striking the tops and waiting for side growths to form; but I found that unless the plants so treated were strong, that the expected offsets did not appear. We now decapitate only the strongest plants, and from those that are not so strong we remove the growing point after the flowering period. Several seed-bearing plants were treated thus last year, and the result has been a very great increase of plants. There is no difficulty in inducing strong tops to produce roots. A very sandy soil should be used, though even that is not necessary, and the cuttings kept in a cool place, so that little water is required until they are rooted. Then place them into 3-inch pots and the spring following they will produce flowers. By this system we transform an old and worn-out plant, with probably a strong tendency to decay in the tap root, into a healthy young specimen.

Another point worth noting just now is the question of watering. I find that many who try to grow Auriculas render all their care useless through an unaccountable fear in supplying the plants with water. Healthy well-rooted plants in freely drained pots should have abundance of water from this time until after the flowering period. I find that our plants require to be watered daily in sunny weather, and it is the same after the summer repotting; when once the plants have become established abundance of water must be given them. Growers will find it a much safer and simpler system to use comparatively small pots, and to water often, than to use larger pots and be in constant fear of injuring the plants through over-watering.

Until last year I resisted the temptation to save seed, but having a good stock of flowering plants I set fifty apart for seed-bearing. From these I secured a large supply of fine seed, much of it of the blood of Geo. Lightbody, Alex. Meiklejohn, Lancashire Hero, Smiling Beauty, True Briton, and others, carefully cross-fertilised. I have kept the seeds until now in their paper envelopes; but I shall sow it very shortly, using boxes in preference to pots, and placing these in a cool Orchid house until the seedlings are ready for pricking off. I have found that the above-named structure is an excellent one for obtaining a good germination of seeds of fine hardy flowers, and fully expect the Auriculas to do well there. The late Mr. Meiklejohn sowed his stock in April under bellglasses in his garden, and I believe they did very well there. John Morris was the best of the stage Auriculas he raised, but that, though superior to many, I did not think it worth the guinea he asked for it a few years ago. Curiously enough, a neighbouring farmer, who seems to have caught the Auricula fever from Meiklejohn, was much more fortunate in raising good seedlings than his master was, his A. Meiklejohn when in good form being one of the most massive of all Auriculas.

The Auriculas of the future will doubtless be the Alpine varieties. For one thing, these catch the eye of ordinary lovers of flower beauty at once, and are usually preferred to the stage varieties. Then they multiply much more rapidly, are consequently cheaper, and very good kinds are produced from the seed, which sets so freely. Moreover, the varieties which have been distributed during the past few years show a wonderful improvement on older kinds, and very soon those who persist in buying packets of seeds "saved from the finest named kinds" will have their perseverance rewarded with something different from the large though wonderfully coloured forms they have at present. It ought to be widely known that the named Alpines do well out of doors in soils which suit them. A few years ago I saw large clumps of the best sorts growing vigorously in a small garden.—B.

TWO GOOD BROCCOLI.

ONE of the best varieties that can be grown for turning in at this season of the year is Veitch's Spring White, and those that have not grown it should do so another year. So far it has proved hardy here, and never failed to produce its medium-sized white heads about the middle of February and on to the end of the following month. It is a compact grower, well protected, and very much more delicate in flavour than the majority of Broccolis. In flavour it is more like the Cauliflower, and its heads are beautifully white.

The other variety is Model, and was sent out by the same firm three or four years ago. This is undoubtedly the latest as well as the most dwarf Broccoli with which I am acquainted. Its stem is very short and sturdy, which adds to its good qualities as a late variety, for protection if needed during very severe winters can easily be applied. It does not exceed 16 inches in height, and may be planted 18 inches apart each way, which

will allow ample room for development. I have grown this variety by the side of Leamington, Ledsham's Latest of All, Hill's June, and several others, and all have commenced heading and been over before Model. The heads, which are somewhat cone-shaped, are as white as any Cauliflower that can be grown, and very little stronger in flavour. Model protects its heads better than any other Broccoli, either early or late; when the heads commence forming and developing they have the appearance of a Cabbage, so close are the leaves round the head. This variety has proved a great success in the south on heavy land, and here in the north on light soil it is unsurpassed. Last year I cut from this variety until June 12th.—A NORTHERNER.

THE INSECT ENEMIES OF OUR GARDEN CROPS.

THE TURNIP.

(Continued from page 173.)

THOMAS CARLYLE gave it as his opinion one day to a friend of ours that the average Irishman was to all intents and purposes a nigger feeding on Potatoes instead of Pumpkin, a remark both uncomplimentary and unjust, as were many of his utterances; but others like him have used the word "nigger" as indicative of character, and not merely colour of skin. And the familiar insect upon our Turnip crops which we call the "nigger" is indeed black at one period of its career, yet before and after that its colour is different. It has also been oddly styled the "Black Palmer," an inapplicable name for the grub, as it belongs by right to a group of caterpillars that are like those wanderers of the olden time who were called *palmer*s from their having garments of hairy exterior. But the grubs or caterpillars of the Turnip sawfly are smooth-bodied, nor are they particularly prone to wander, as they keep in close companies to the leaves till these are shredded; and as they cannot be renewed by the plant with the rapidity that they are cleared off when the grubs are abundant, the death of a large portion of a crop may happen. The dry season of 1835 is supposed to have been the season in which it did the most mischief throughout England. Next to that is 1782; the attack was heaviest then in the eastern counties. The insect appears to have been first noticed in 1756—that is, as a species damaging Turnip crops.

The so-called "nigger" is a caterpillar developing finally into a four-winged fly, belonging to the injurious group of sawflies; the females bear a cutting instrument, by means of which they deposit eggs in the substance of leaves, buds, or wood. Of this species, *Athalia spinarum*, there is a varying number of broods during the year. The opening attack is made during the spring, when the flies place their eggs on the Turnip leaves; but the species does not appear so early as the "fly" or beetle, *Phyllotreta nemorum*. It is the habit of the females of *A. spinarum* to lay nearly 300 eggs, which are placed in slits, cut by the saw-like ovipositor upon the leaves with no particular preference. We find a greater number of these insects in a warm and bright spring than in one of an opposite character, and their eggs also hatch more rapidly then. To the caterpillars, sunshine, even when powerful, seems to be very pleasant, though many caterpillars seek shade. There is, in consequence, no difficulty in discovering them upon the plants, excepting while they are very small, their greenish-white hue at that stage renders them less easy to find. And, before their first moult, they have a habit of dropping by threads, if disturbed, to reascend similarly after the alarm is over, though afterwards they have simply to descend at once to the earth and crawl back to their food. These caterpillars are somewhat American in their taste for elevating the lower extremity of the body in the air, little use being made while eating of the sixteen pair of sucker-feet or claspers, but they grip firmly to the leaves with the six horny feet. Three weeks after hatching they are adult, being then blackish, with a pale stripe on the side, and, quitting the Turnip, they spin a smooth cocoon of silk in the surface of the soil, but it is not very perceivable. Of the flies there follows another flight in the early part of the summer, and their eggs produce a second brood of caterpillars that feed up slowly, yet do in their turn a degree of injury to the Turnip crop during the warm weather; and there may be a third brood, which, feeding more slowly still, lies nearly all in the chrysalis state until spring. Hence, after any appearance of these insects, it is advantageous late in autumn to remove the surface soil, or thoroughly rake over the ground.

It is not easy to open the campaign against the "nigger" by destroying the parents of the spring brood, for the flies conceal themselves amongst the leaves, though when upon the wing their orange and black markings attract notice, and in a garden some may be caught with a hand net. When the caterpillars have been discovered to be feeding, it is a good plan to sweep them off the plants, for it is seldom any that are brought down while in the act of changing their skin manage to get back to the Turnips. The plants may be brushed with light twigs of Fir or Broom, or a suitable bunch can be fixed in the front of a "scuffler." Hoeing and thinning are not serviceable—nay, these operations rather help on the proceedings of the sawfly grubs. Lime or soot kill many of them if sprinkled upon the leaves; moisture, too, is very unpleasant to them, but this is best applied to the spring plants on a dull, though not a cold day. Strengthening the crop is important by means of solid or liquid manures, such as the weather and the stage of growth may indicate. Another insect that is also four-winged in its state of maturity, though belonging to a different order than the preceding, is apt to weaken the Turnip considerably, being rarely absent from the plants in fields, and occurring some years so abundantly that their vitality is extinguished by this species smothering them, so clogging up the breathing pores, or

draining all their juices. More than one species, in fact, of aphid or plant louse resorts to the Turnip; the two that are most familiar to us are that called *Aphis dianthi* and *A. flos-rapæ*. The latter is thus named because it chiefly infests the flower stalks; it is greenish, covered partially with a white dust; the former is of a greenish red or brown. In both the flies are black and yellow. They are not confined to Turnips and Swedes, for they are partial to Potatoes, and indeed distribute themselves over a variety of plants in gardens and fields. It would appear that the winter is passed by the species in the egg state, where cannot be stated positively, but wingless females, parents of a succession of swarms, may be detected at an early date, before the Turnips are strong enough to defy the attacks of these and other spring insects. Where they appear on a bed of Turnips in a garden, it may be the best plan to pull up at once any badly infested plants, and strip off all leaves on which aphides are found when the plants are partially touched. Upon a crop that has been neglected it will be advisable to try copious syringing, and with some solution that will adhere to the skins of the insect, and so burn or suffocate them. Of the many applications recommended for killing plant lice, tobacco water well impregnated with softsoap seems to be as beneficial as any for clearing Turnips.

We may conclude this article by mentioning two small insignificant insects that are members of the Dipterous order, and that are scarcely to be called mischievous, though in some places it will be observed the Turnip leaves are somewhat disfigured by their larvæ or maggots. They have not been known to gardeners until recently, and Mr. Newman, when describing them, stated that he could not suggest any remedy. Neither of these flies exceeds the size of a large pin's head—one is called the black-horned leaf miner, in science *Phytomyza nigricornis*, the larva works mines or tracks on the under side of the leaf; these are not visible from the upper side. These turn to pupa within the leaf. A trifle smaller, and having pale horns, is the species named *Dryophila flava*; here the larva is as careful to keep on the upper surface of the Turnip leaf, and, at its maturity, this quits the plant to undergo pupation in the earth. One speculation with regard to these species is curious; it has been argued that if Turnip leaves thus mined were to be eaten by cattle they would have an unwholesome effect upon the animals.—**ENTOMOLOGIST.**



KITCHEN GARDEN.

BROAD BEANS.—Those sown in autumn or early in spring, and which are showing well, should have a quantity of soil drawn up to each side of them with a drag-hoc. A good sowing as a main crop must be put in. It takes about three months from the time of sowing to mature. Poor or light soil will never produce good Broad Beans. The stiffest soil in the garden will grow them much better than any sandy open part. Manure from the cowsheds or earth-closet is the most suitable. Open the drills about 3 inches deep, do not sow the beans too thickly, and keep a look out that the mice do not destroy them.

PEAS.—Supply those in frames with tepid soot-water; keep the lights well tilted or off altogether on bright days, but close them at night, and cover them, if necessary, to protect from frost. It is generally the dwarf varieties which are grown in frames, and it is an easy matter to close the lights until the pods are ready to gather. Those coming forward in the open should be earthed up when 3 inches high, and staked immediately afterwards to afford shelter. In late cold districts there may still be plants in pots, boxes, or turves under glass, and these should be placed out as soon as possible, or they will not pod before those sown in the open air. Sow more seed of the main crop varieties. These will be podding about the end of June, when the weather may be very hot and dry; and if the soil is light, form trenches, manure these heavily, and then sow the seed in them. This will make a little extra work just now, but it will be amply compensated for by the crop.

CARROTS.—Early Carrots in frames are now gaining size and are very apt to suffer from overcrowding. Thin them to 2 inches apart at least, and when the roots are large enough for use do not draw them all from the one place, but take them from here and there, and allow those remaining all over the bed to have more space to develop. The main crop of all, the Early Horn varieties, should be sown without delay. A light moderately rich soil, perfectly free from worms, will always produce them in fine condition.

ASPARAGUS.—Finish forking or top-dressing around the old plants as soon as possible, as growth will shortly be general, and to disturb the soil after that is very injurious. Soot, salt, seaweed, and any kind of bone manure, especially Beeson's, will benefit the plants greatly. These may be turned into the soil as forking goes on, and where the soil is not forked sprinkle them on the surface and let the rain wash them in. It is too early to begin transplanting.

LETTUCE.—These are always welcome in warm weather, and to have them constantly fine and abundant seed must be sown every fortnight or

three weeks during the next three months. Germination will take place quickly now and in almost any soil, but as a few hundred plants may be raised in a very small space there need be no difficulty in giving them a good position. Should any of the winter stock remain untransplanted get them out at once. If there be a scarcity of early plants put them in a warm position in good soil. The plants from spring-sown seed are now large and almost ready to be transferred from the frames to the open quarters, but before doing this they must be well hardened, and they should all be lifted and planted again with soil attached to the roots. Plants from spring-sown seed are generally much finer than those kept through the winter.

FRAME CROPS.—These are generally in a forward state, and should be ventilated freely on all favourable occasions, but sometimes the lights placed over Potatoes early in spring are required for bedding plant frames at this season, and very often the vegetable crops suffer severely in consequence. They are kept close and warm for a time, and when the lights are taken away they have generally to depend for protection on some kind of makeshift; but this is not the way to mature the crop properly, and it should be as little resorted to as possible. Keep the lights on, especially at night, for some time yet, and when they are moved try and prevent the leaves or stems being injured by frost or wind. Mustard and Cress seed may now be grown under a handlight or in a cool frame, and should be sown fortnightly for the next eight months.

CHOU DE BURGHLEY.—The present is the time to sow seed of this delicious vegetable to produce heads in October and late autumn. The seed and young plants are as hardy as Cabbages or Savoys, and no special care is required to insure success with it.

RED CABBAGE.—These are often sown in the autumn, and any plants in the seed beds now should be moved to their permanent quarters. Like other Cabbages they delight in rich soil, and will not succeed well without it. Those planted out now will form heads by August, but useful produce may still be secured this season by sowing a pinch of seed now and growing on the plants to head in October. Of the two we prefer the spring-raised plants. They do not become so large as the autumn ones, but they are more tender.

SPINACH.—A good breadth of the round-seeded variety should be sown. It will be ready in May. It is not particular as to situation. We secure good crops between Raspberry rows, Currant and Gooseberry trees, and Pea rows. A little shelter such as these afford is an advantage. Sow the seed in drills 2 inches deep, and thin out the plants to a few inches apart as soon as they begin to look crowded.

TURNIPS.—Make another small sowing of the Early Milan. Sow in drills 18 inches apart, 2 inches deep, and very thinly. Stiff soil is very unsuitable for early Turnips.

Look over stored roots, such as Beetroot, Carrots, and Parsnips; remove all growths and decayed roots; secure sufficient Pea sticks before the trees begin to grow; clip Box edgings, and while putting in the crops do not fail to keep the whole garden orderly.

FRUIT FORCING.

VINES.—*Early House.*—Early Grapes that have passed the stoning process will be greatly benefited by liberal supplies of tepid liquid manure given to the inside borders; and the paths, walls, and mulching on the borders may be sprinkled with it on fine evenings, but it ought not to be used unless the practice prevails of admitting a little air at night, and then the house should be sprinkled with the liquid manure a couple of hours previous to the night ventilation. Examine the bunches for the last time, and remove any berries that will interfere with their symmetry, also any imperfectly fertilised berries. Encourage lateral growth by pinching the points out of the strongest only, and tie these down to the trellis, allowing the weakest to find their way up to the glass, when they may be stopped. Commence ventilation early, and close in time for the temperature to rise to 85° on bright afternoons.

Early-forced Vines in Pots.—Attend well to Vines in pots carrying full crops of fruit, keeping them well supplied with stimulating food by top-dressing and mulching, allowing the laterals to spread over the uncovered parts of the trellis. Maintain a moist genial condition of the atmosphere to insure the berries swelling freely, but avoid a close vitiated atmosphere, ventilating a little at night, and increase it from the early part of the day, closing early. Very early Vines will now have the Grapes colouring, and should have a circulation of rather dry warm air secured to them constantly, at the same time moderating the supply of liquid manure to the roots; but neither as regards the roots nor atmosphere must there be any sudden approach to aridity, or the result will be imperfectly swelled and finished fruit.

Succession Houses.—Disbudding, tying, and stopping will need attention, and keep the thinning well in hand, commencing with the freest setting kinds, but Muscats and other shy setters ought not to be thinned until it is seen which are the properly fertilised berries. Maintain a gentle circulation of air where Vines are in bloom, and fertilise shy setters when the temperature has reached the maximum of the day. Let Black Hamburgs have a minimum temperature of 65°, with 5° more for the Muscats, Mrs. Pince, and similar varieties, fertilising these with Hamburg pollen. Remove the remains of all fermenting materials from inside borders, but keep those outside protected for some time longer.

Late Houses.—The Vines where former directions have been followed will now be starting. Ply the syringe freely several times a day, give the inside borders liberal supplies of warm liquid manure, and endeavour to insure an even break by closing with a humid atmosphere of 75°. Strong young Vines that do not always break evenly should be kept in a

horizontal position until all the lower buds have started, but old Vines will hardly require this attention.

Cucumbers.—Stopping, thinning, and tying the shoots will need almost daily attention; especially is this the case with plants that have been fruiting all the winter. In order to keep them in bearing remove all decayed portions of stem and leaf, and encourage a free growth of young wood, which should be tied up to the trellis, removing the old portions to make room for the young. Then take off an inch or two of the soil from the surface of the bed, not disturbing the roots more than can be helped, and give instead an admixture of two parts light turfy loam, a sprinkling of charcoal, and one part of well-decomposed short dung free from worms. Into these fresh ingredients the roots will push speedily, after which, when circumstances require it, water them liberally with diluted tepid liquid manure. Maintain a night temperature of from 65° to 70°, and 75° by day artificially, with a rise of 10° to 15° from sun heat, and keep the bottom heat steady at 80°. Liberal and frequent supplies of tepid liquid manure in a diluted state must be given to the roots of plants swelling their fruits, especially to those having their roots in a somewhat confined space. Syringe the plants freely, so that the foliage may receive a good washing every morning and afternoon during favourable weather, which, with judicious ventilation and sufficient water at the roots, will keep red spider away.

Melons.—Although the weather has been cold, and easterly winds have prevailed, the plants have made satisfactory progress. Remove all blossom from plants swelling off their fruits in the early house or pit, which will need supports in order to relieve the plants of the weight. Pieces of board 6 or 7 inches square and about half an inch thick answer very well, suspending them in a sloping position to prevent the lodgment of water, and being secured to the trellis by pieces of wire, one to each corner of the board. Small-meshed garden netting also answers for the same purpose if secured in the same way. The soil will need examining about twice a week, and if the necessity for water arise it must be applied thoroughly. The plants will most likely be in a condition at the roots to receive a weak application of liquid manure, but avoid applying it close to the stem, as that would be likely to result in canker, and should that appear rub quicklime into the affected parts.

PLANT HOUSES.

Aerides.—These plants may now be repotted or top-dressed. Those that do not require larger pots should have the whole of the sphagnum moss removed from the surface, and fresh supplied in a living state. When the old moss has been removed, if any decomposed particles have fallen amongst the crocks and charcoal they should be washed out by pouring tepid water into the pot. Allow the water to drain thoroughly from the pots before replacing the sphagnum moss, which must be well elevated above the surface of the pots. Those that require larger pots must have all the charcoal and crocks carefully removed to which roots do not cling, and the pots broken if they cannot be taken out without injuring the roots. The portions to which the roots are clinging must be placed into the larger pot, and then charcoal and crocks can be arranged amongst the roots until the pots are nearly full, and upon these sphagnum moss only must be used. Any plants that are a little unhealthy may have their roots washed and be potted for a time entirely in crocks and charcoal, in which condition they will soon recover if carefully watered. After potting and top-dressing dew the moss daily with the syringe to encourage growth. *Vandas* and *Saccolabiums* may also be potted and top-dressed, and the system and treatment advised above will suit them admirably. No attempt must be made to place the roots of the latter inside the pots or baskets in which they may be grown, for they delight in having their roots in the air.

Phalænopsis.—The sphagnum moss used for surfacing the pans or baskets should now be renewed. This will be required annually, for the large supplies of water given to these plants thoroughly decompose the lower moss in one season. After this has been done the plants may be lightly syringed twice daily to start the moss into growth. Much care must be exercised in this operation, especially when the plants are in bloom, as their delicate flowers are very liable to become spotted. A sharp look-out must be kept for thrips, which soon disfigure and destroy the foliage of these plants.

Oncidiums.—These have started root-growth, and may be repotted, rebasketed, or top-dressed without further delay. For the majority peat fibre with a little charcoal will be found the most suitable compost. The fibre will last in good condition much longer than moss, and is, therefore, preferable to a mixture of both. These plants require a less bountiful supply of water during the greater portion of the year than many Orchids; therefore the surfacing of moss after potting, which adds to the neat appearance of the plants, is better deferred for some time until liberal supplies of water can be given so that the moss will grow freely. After potting the most careful watering must be practised until the roots are active and growth well advanced. Remove the whole of the old compost if decomposed or likely to become sour before the plants again require potting. Some species root very freely into the surface dressing of moss, and those that do so should have a greater depth of moss given them than others that root with equal freedom into the peat fibre. Species that prefer something to which their roots can cling should have a good proportion of charcoal in lumps.

Cypripediums.—The plants that require potting or top-dressing should receive attention before they are too far advanced in growth, or they are liable to receive a serious check. These useful Orchids grow quickly when the material about their roots is kept in a sweet healthy condition. When these plants are in pots and pans nearly full of drainage, and well

elevated, the whole of the compost can be picked out annually and replaced with fresh without turning out the plants or disturbing their roots until they require larger pots or pans. A suitable compost for these plants is equal portions of peat fibre and sphagnum moss, with lumps of charcoal freely intermixed. Some cultivators prefer loam for a few species, but they will do equally well in the compost named, and are much safer in the hands of all but experts who know exactly how much water to apply. When potted in loam they are more liable to suffer from excessive watering, which will cause the foliage to become spotted and injured.

Cattleyas.—Many of these are now growing, and potting should be done as soon as the plants are ready. The pots must be broken, for the roots generally cling to their sides in large numbers. The portions of pot to which the roots cling must not be disturbed, but place them into the larger pots. Remove the old compost carefully from amongst the roots and supply fresh. When this is done, the material, if good, will remain in a healthy condition about the roots until the plants again require repotting. Peat fibre from the very best peat must be used. If plenty of drainage is employed charcoal or crocks intermixed will not be needed. We always employ a little moss, but near the surface, and not mixed with the fibre, so that it can be picked out annually. Water these plants at their roots carefully, and see that it does not lodge in the young growths, or they are very liable to decay at this time of the year.

THE FLOWER GARDEN AND PLEASURE GROUND.

Forming New Lawns.—No time should be lost in completing any levelling and turf-laying that require to be done. It is true turf may be put down at almost any time of the year, but it is a difficult matter to prevent shrinking, which renders the lawn unsightly during the whole summer. Good turf is soon obtained by sowing a properly prepared mixture of lawn grass seeds, and on the whole this may be said to be the cheapest, and not unfrequently the best way of securing a good expanse of turf. In either case the ground should be made quite level and firm, or otherwise inequalities will soon result, this being an eyesore to many, besides entailing much subsequent labour in the shape of releveling, especially in the case of tennis and croquet lawns. It will not do to merely level, shaving off the mounds and filling up the hollows with the soil thus obtained, as this is certain to result in an uneven surface, but all must be dug, the subsoil being removed from the mounds and added to the subsoil in the hollows. The levelling can be done with the aid of stout pegs, one of these being fixed at the required height of the level, and the rest brought to the same level with the assistance of a straight edge and spirit level. After the soil is levelled and made firm so as to be at the height of the top of the pegs, these can be removed and the turf laid or the grass seed sown. The surface soil should be fairly good, as if very rich the grass will grow too strongly, while if very poor or badly drained weeds and moss are almost certain to be in the ascendant. Early in April is a good time to sow the grass seeds, and if showery weather is chosen for the work the seeds will quickly germinate, and be less likely to be picked up by birds. Cover the seeds with a little fine soil in preference to attempting to bury them with rakes. On lawns where ridges are to be removed or hollows filled up, in most cases it will only be necessary to pare off and roll back the turf, removing some of the subsoil, or adding more to the surface soil as the case may be, and then the turf can be rolled back exactly as it was before. If this is done late in the spring a little leaf soil or good mould should be placed directly under the turf, into which the grass will quickly root, and thus little or no check be given. In every case the turf should be well beaten down.

Pruning Climbers.—Much of this may now be completed. *Chimonanthus fragrans* has now ceased blooming, and should have all lateral growth spurred back to near the main branches, and the spray and medium-sized growth resulting will flower abundantly next season. Deciduous and evergreen *Magnolias* may be thinned out if much crowded, the former having any extra long foreright branches shortened back, and the fastenings securing the main branches made good. The evergreen varieties, of which the best known is *M. grandiflora*, require extra strong supports, strips of leather being suitable, and all the principal branches have to be tied in, or strong winds will break many of them down. *Hibiscuses*, *Honeysuckles*, common *Jasminums*, *Pyrus japonica*, *Cratægus Pyracantha*, and *Loniceras*, should all be annually spurred back, or otherwise they soon lose much of their beauty, becoming, in fact, unsightly rather than ornamental. *Jasminum nudiflorum* and *Forsythia viridissima* to be spurred back to the main branches directly after they have done flowering, the shoots and spray resulting flowering freely next season. *Escallonia macrantha* to be kept neatly fastened up, and only the coarsest of the branches shortened back. The summer-flowering *Clematises*, such as *C. montana*, *cœrulea*, *azurea grandiflora*, *Albert Victor*, and *Lady Londesborough*, flower on the ripened growth formed last year, and consequently this should only be thinned out, and all dead or weakly growth removed. The autumn-flowering section, of which *C. Jackmannii* is the best known type, and which also includes *Tunbridgensis*, *Gipsy Queen*, *Robert Hanbury*, *lanuginosa*, *Lady C. Nevill*, and *Velutina purpurea*, flower on the current year's growth. These, then, should be freely cut back in order to obtain a few extra strong shoots, which will yield finer blooms over a longer period than if left unpruned. Thickets of these, or any other climbers, ought not to be permitted. *Wistaria sinensis*, *Passion Flowers*, and *Bignonia capreolata* should have all lateral growths spurred back to near the main branches, the leading growths only being laid in where required. *Ivies*, if left uncut, soon break away from the walls, and will present a much neater appearance

if closely cut back to the principal branches, and some prefer to trim off all the old leaves as well, their places being quickly filled by young ones.

Pruning Roses.—In most districts the greater portion of this work may be at once completed. Those newly planted, however, may well be left until they have commenced to form fresh roots, this causing them to break more strongly. As a rule we make little or no distinction in our manner of pruning both the Hybrid Perpetuals and Teas, and we get plenty of Roses. The standards are pruned the hardest. All spray is removed and the head freely thinned out, the best placed shoots being selected, those about the size of a lead pencil being cut to about the fifth bud from the base, those stronger being allowed more length, and those weaker we shorten to the second or third bud. To severely shorten gross shoots will result in the formation of still stronger shoots, and which seldom bloom satisfactorily, while unless weakly growth is severely pruned it will produce nothing but spray. Aim as much as possible at the production of well-ripened medium-sized growth, and this is both the most hardy and floriferous. Fore-shortening, or the act of cutting the badly placed outside branches and the old wood attached clean back to a better placed lower branch, is frequently necessary in order to preserve a neat and generally well regulated head. Dwarf Roses being generally stronger-growing should not be so closely pruned, but the same rule applies to all of weakly growth, as in the case of standards. If preferred, and the plan is a good one, the strong young growths may be pegged down and the old growths cut clean away. They flower very freely when thus treated, and are certain to throw up plenty of strong shoots for next season's display.

THE BEE-KEEPER.

SEASONABLE HINTS.

AT the present season when all nature is bursting into life the question of our apiaries is of considerable importance, for upon the judicious treatment for the next three months depends the whole success of the season. There is not so much of the element of luck in successful bee culture as many people imagine. The success simply depends on the necessary knowledge of what to do at the proper time, so that our bees may be in proper condition to take advantage of the honey flow when it comes. The great point is to begin right. No amount of after care will make up for lost opportunities. Do not regret that you have not got all the nicknacks used in modern bee-keeping. If you need them make them, or if money is plentiful buy them, and in a few years you will be surprised at how many things you can do without. Young people want everything, old ones very little, and this is true in apiculture, for I have taken as fine honey out of a small cask bought by an apiarian friend at his grocer's for 3d. as ever I took out of the most expensive bar-framed hive.

Some years ago, having to illustrate how cottagers could make their own hives out of bacon boxes or any kind of boxes, an old apiarian friend called to inspect some of my foreign bees, which happened to be in those rough hives made of old boxes. I sent my friend and his companions to my apiary; and, after an inspection of the interior of those hives my friend said, "I am bound to confess I have been freely criticising the outside of your hives for their roughness, but I admire the insides." Now it is the inside we have most to do with, and only let a skilful apiarian have the bees he will soon have them giving a good account of themselves.

At this time of year, when renewed activity will be beginning to manifest itself in most hives, it will be well to turn up the covers (quilts) and see if there is any sealed comb still left unconsumed. Now is the most critical time for bees, and the one point to be attended to is to see that they do not die for want of food. In the case of straw skeps take out the bung and look for sealed comb. If the hive is very light it must be fed, and the best feeder is one of those square Hollands 3-inch bottles with short neck and square shoulders, or in fact any bottle. Mix 4 lbs. of American granulated sugar in 1 quart of water; place the sugar in a muslin bag, and suspend it in the water—it will soon dissolve; or if you wish heat it on the fire. Be careful not to burn it. Put no vinegar or salt into it. Then fill the bottle. Tie a piece of muslin or cheesecloth over the mouth. Invert it into the bunghole of the skep, and place a piece of loose cloth around the neck cover with an empty skep to keep other bees from it, and continue this treatment until honey freely comes in. For bar-frame hives, the cover or quilt having a hole in the centre, cut a 2-inch hole in a piece of half-inch board, and place a wide-mouthed bottle inverted over this hole, which will allow the bees to freely come and go underneath the bottle. Disturb them as little as possible, as the bees know best when to be active. The greatest fault of bar-frame hives is the facility of examining the bees at all times and often in the most unseasonable weather, resulting in loss of queens, disheartening the bees, and the liability to contract that worst of all diseases—foul brood. Let your bees alone except in absolutely necessary cases. If you wish to be extravagant and

give the bees a treat give them a pint of milk food, which is highly stimulating. Next see that in some sheltered nook you place some fresh ground bean and peameal fresh from the mill; the bees will soon find it and utilise it upon occasion. Cover it with a skep raised half an inch on the sunny side, and see that it does not become damp. If it does give a fresh supply; it will amply repay the cost.

Remember that at present the one essential point to be attended to is to see that the bees do not suffer for want of food, for they will be about to commence breeding in earnest, and will need much more than they have previously consumed. Readers must bear in mind that these notes are written from North Yorkshire; consequently, the south of England will be much earlier, and farther north much later. By looking to the hives at the present time it can be decided which to work for swarms and which for honey, and a good return can only be obtained in one direction. If swarms are wanted do not expect much honey, and *vice versa*. Honey pays the best, only we cannot always depend on a crop. For my own part I have seldom known a season when I could not secure a good honey return either from Clover or Heather. The point I wish to impress is to keep stocks in a fit condition to send out an army of workers to gather the honey when it does come.

Much ignorance prevails amongst our rural population in regard to bees. Take a case which I saw only a week ago. A small farmer had often asked me to call and see his bees. Being in his vicinity I visited him and went to look at his hives. There they were—fine straw skeps, but fine-toothed combs fastened over the entrance to prevent the bees coming out. I said "I doubt your bees will be all dead," after learning that they had been fastened up that way all winter. I took away the combs and raised the hives from their floor boards, which were covered about 2 inches deep with smothered bees, and found in each skep about a pint of live bees. A few more hours, and all would have been past recovery. I turned to my host, whose eyes expressed astonishment, while he was exclaiming, "Dang it all, who'd have thout it?" and so forth, and I explained to him the necessity of bees having a cleansing flight as often as the weather permitted, pointing out to him the evident relief his bees were receiving from their liberty. Those are the class of people who ascribe all losses to bad luck; and if it will be any encouragement I may state that by careful management two of my best hives weighed at Great Ayton railway station gave the gross weight of 17 stones. This from the Heather only. One of them had previously given me a 56 lb. of super honey from a field of Beans in fourteen days.—W. CRISP, *Great Ayton, Yorkshire.*

SQUARE STEWARTON HIVES.

I AM thinking of having two square Stewarton bee hives made after the pattern described in the Journal of December 11th, 1884, by "Lanarkshire Bee-keeper." Perhaps you will in next issue give me the depth of each body box, as I find only the depth of one is mentioned—namely, 6½ inches. Also please say if the top bar, and ends of bars, are all of the same dimensions for each box, bars 1½ inch, end pieces seven-eighths inch. How are the distances between each bar to be regulated? Is it only necessary for the top box to be provided with lateral slides? How ought the swarm to be placed in? Should they have access to all three boxes when first put in? Describe the uses and the management of the three body boxes, also the advantages of the three boxes? Is this a better hive than the compound frame mentioned by the same writer some time about midsummer.—NOVICE.

[The body boxes are all of one depth, the supers only being less. To the second question, Yes! The distance between the bars is regulated either by a wire nail, staple, or brass nail, of which the head is a quarter inch high. The lateral slides are for the top only. The bees are put into these hives the same as they are put into an ordinary straw hive—either by shaking the bees into them, or by causing them to run up into them. Place the swarm or swarms into two boxes only, and if the bees are numerous put on a super the following day—that is, if the weather is favourable and the flowers plentiful. After a while the third box should be added if the season is prolonged; this gives the required breeding space, allows sufficient store room, and prevents the queen ascending the supers. The advantages of the three body boxes are many; for example, a swarm or stock can be built up or reduced by degrees. When honey is plentiful the upper box can be taken full with all the cells sealed, which is not always the case with a deep frame. As it is advisable to have new combs at all times, these can be renewed annually by degrees during the summer. The above hive, if properly made and thoroughly protected from the weather, is for all purposes an excellent hive, and can scarcely be surpassed, so is the compound frame hive, but which is the better bee-keepers must decide for themselves; neither of them will disappoint.]

ABOUT BEES.

My practical bee-keeping only dates from 1883, and some of my earlier experiences were given at page 475, vol. vii. of this Journal. Now for experience to have any practical value we must have data, therefore I may state that the stocks started with in 1884 were as follows:—1, Straw skep, 1880 original colony; 2, straw skep, 1881; 3, 4, and 5, bar-

frame hives, 1882; 6, 7, 8, and 9, bar-frame hives, 1883, the dates showing when they started as separate colonies. The intention in 1884 were to get stock, and as everybody was keen in tendering advice I resolved to rely solely on my own judgment. Besides, what could I have better for solving doubts and answering hard questions than the "The Bee-keeper" in the files of the *Journal of Horticulture*? Well had it been if I had not only read but heeded, yet beginners do not like the rutted road, they must take a smooth path offering a near cut, and they see no danger until lost in a quagmire. Some beginners, it is true, follow their leader and are safe, but labour under the disadvantage of not making any discovery, as they know nothing of disaster.

Taking the hives in the order named the following were the results:—No. 1, straw skep did not swarm naturally, though the bees had clustered since the third week in May, and were therefore driven on the 13th June, and so effectually that but few bees were left in the skep. Though set in its old place they kept to the queen, and the original colony, which was a runaway swarm, died out; indeed I found its entrance sealed by the cocoons of the worms of moths, and I consigned the lot to the flames. The bees of No. 2 straw skep were driven on the same day, and as the disaster to me was even then foreseen, I took pains not to drive so keenly, taking only a weak swarm, and leaving about half the bees in the skep. These recruited famously, and I intended to find them soon in the possession of a fertile queen, and then transfer them to a bar hive. Strong they were and heavy, and just as I was thinking of transferring I was prevented doing so by circumstances to be afterwards described.

In No. 3 bar-frame hive the bees swarmed naturally on May 17th. A second swarm was sought by artificial means on June 16th, and this though making fair progress died. This was a great blunder. I got but a weak swarm, and it so weakened the parent hive that they did not recover, and fell an easy prey to robbers later on. Thus I lost the stock and the second swarm. No. 4 bar-frame hive produced a swarm on May 20th, and another swarm issued on May 30th, both naturally. The last died in the dog days. The stock succumbed to robbing. The bees of No. 5 bar-frame hive swarmed naturally on May 24th, and in seeking a second swarm by driving on June 14th a failure was experienced. No. 6 bar-frame hive did not swarm naturally, and failed in driving on June 14th. I failed to find a queen, and it fell a prey to robbers. No. 7 bar-frame hive was made to yield a swarm on June 14th artificially, and I failed to take a second on June 26th. I began to think of retrieving the apparent disaster, therefore returned the queen to her disconsolate subjects. No. 8 bar-frame hive gave a strong swarm by artificial means on June 14th, and it failed in making a second on June 26th, or rather it was so poor that I returned it. No. 9 bar-frame hive made no effort at natural swarming, and I made an effort at an artificial, and with so little success that it was returned. Then I sought a multiplication of the swarm of May 17th from 3 bar-frame hive stock, and so poor was this that it also was put back, and I tried the swarm from 4 bar-frame hive stock for increase, and had to return it.

Up to the middle of July I had sixteen stocks or prospective stocks, as none of them had then collapsed, which I did not consider bad progress, especially as I had seven swarms out of as many stocks; but I saw an enemy on the frontier in the information conveyed to me that a neighbour who keeps bees for profit had taken 2½ cwt. of honey by the extracting system—a worse than the brimstone pit system, or from the bars at the height of the honey season. I knew what it meant, as honey was scarce, the Clover was dried, and other sources of supply were almost nil. If the honey were taken from the bees where were they to draw their food from? The weather was very hot, to close the entrances was out of the question, so I got some perforated zinc, cut a hole to admit one bee only at a time, and placed it over the entrances of all the hives. This was not done a moment too soon, for down upon the hives was a host of Ligurians and half-breds. The Ligurians first tried the 2 straw skep, and though the battle was fierce the blacks (ours are all blacks) had to yield, and I took it up—as they had driven out the bees—to save the honey, which was in full store; but there was no brood, so I suppose the bees had failed to rear a queen, or her majesty had been lost.

The robbers would have nothing to do with No. 1 skep, which was soon explained when I found the entrance sealed by the cocoons of the moths. Foiled in getting the honey from No. 2 skep the robbers fixed on No. 5 bar-frame hive. The slaughter was severe, but what could one do against twenty-six, the number of hives of the famished Ligurians? It fell. I closed it to save the honey (not less than 72 lbs.), and the robbers repeated the compliment on No. 4, No. 5, and No. 6 bar-frame hives, but in no case were they allowed to take the spoil. The efforts of the Ligurians on the other hives were remarkable. They tried to gain an entrance by every crack, that on the floorboard being clustered with them, also where the cover joined the hive. The sixteen were by early August reduced to ten, and I began to despair of even these, as wasps came and gained an entrance, which I thought showed the bees were wearied out; but any doubts on this head were soon dispelled, for if a Ligurian showed at the entrance it was soon expelled, and so were the wasps. These I trapped by gallons, for to get at their nests was impracticable beyond a radius of a quarter of a mile in two directions—i.e., north and south, and we destroyed over eighty nests where we had liberty of action. I may mention that the Ligurians entered the bottles of sweetened beer set for the wasps, yet they soon found out the mistake. Still they sought the hives until September 4th, when something occurred which I had not anticipated, although I had noticed the black bees were gaining more confidence and were more frequently seen from the hives; for from the middle of July to early September they kept very closely to the hives, appearing to care for nothing only to guard their stores.

A neighbour who keeps bees on the old lines—straw skeps and brimstone pit system—kindly offered before the disasters began to let me have the bees he intended destroying, and he had to send word several times before I could be prevailed on to fetch them, for I feared their falling a prey to the Ligurians, as I intended to put the driven bees into the old hives which were heavy in honey. As he would take no denial I took four hives and transferred as many stocks. One was a second swarm, and though having a good queen I deposited her and put the bees to one of the other stocks stood in the place of the poor hive on purpose. I therefore had three stocks, and being put in hives with plenty of stores, I made no question of their doing well, only having a slight doubt of one, which was an old stock, only moderately populated, and to which the bees of the second swarm hive had joined. No sooner were these got home than on came the vandals again, I think in stronger force than ever. They gained an entrance, and the black bees simply rushed out of the hive and gave up the combat. What became of the queen I do not know, for though I sought for her I failed to find her dead, and she certainly was alive when the Ligurians made the onslaught on the hive. The black bees seemed to fight more languidly in this hive, but in the other two they defended the entrance with the keenest determination, and they were subjected to daily warfare until the 14th September, when I noticed black bees in fierce battle with the Ligurians at the entrance to the hive they had driven the bees from, but it was closed by perforated zinc. The blacks from the ten hives that had been on the defensive for six weeks fought most courageously and victoriously. From that day to this (Feb. 13th) I have not seen a Ligurian bee near the hives. The black bees had the honey, I gave them another full of their unfortunate comrades garnering yesterday and to-day, which they seemed to much enjoy. The black bees have not the greed of Ligurians, but they have pluck, and will, I feel sure, outlive any number of foreigners.

I have now twelve colonies all in bar hives. Only one is weak, and it is seeking to become strong, as I notice pollen is being gathered which I think is obtained from the catkins of the Hazel. Except the two taken from the skeps all are carrying pollen, so that I am improving, and shall be careful in future to make all stocks before the middle of June, and always have stocks strong enough to resist invaders. I must say in conclusion that I hesitated about sending my experience in bee-keeping for 1884, yet I thought it would be cowardly to shrink even from an attack of hostile criticism, especially as I was so inexperienced; but the best of apiarians must have been schooled in experience of a similar character, and disaster only nerved them to greater effort. I have more to say yet.—G. ABBEY.

TRADE CATALOGUES RECEIVED.

Keynes, Williams & Co., Salisbury.—*List of New Roses for 1885.*
Webb & Son, Wordsley, Stourbridge.—*Catalogue of Special Manures.*
Harkness & Sons, Bedale, Yorkshire.—*Catalogue of Florists' Flowers and List of Lawn Mowers.*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Books (W. C.).—The work you name is out of print. (L. E.).—We know of no other work on the Tomato than Mr. Iggulden's, which is practical and good. It is published at this office, 1s. 1d., post free.

Tea Roses (A. B.).—The vendor to whom you refer was not justified in sending plants different from those ordered, and if he had sent them to us we should have returned them immediately, as the grafting would then have been quite apparent. This being so, and you having accepted and planted them, we suspect you have no remedy, but you had better consult a solicitor.

Pruning Yew Hedge (P. T. S.).—If the Yews have been well planted and the roots are kept moist throughout the spring and summer we think there will be small risk of failure. In the warm afternoons of bright days during the same period a good watering over the foliage, or syringing, would be beneficial. The protruding side growths may be shortened now with the knife, next spring still more closely, also with the knife, and in August afterwards, or in 1886, the shears may probably be used. Your letter on bees being marked "private," we presume no reply is expected.

Heating a Glass Structure (R. B. P.).—The house, we presume, is a lean-to, in which case three rows of 4-inch pipes will be suitable for your purpose, and we should prefer them to six rows of 2-inch pipes. The latter would heat more quickly than the former, but would cool in the same proportion, and as a low temperature with consequent injury almost invariably occurs in early morning before the fire is attended to the larger pipes are more reliable. A small air-pipe should be inserted in the highest part of the flow-pipe most distant from the boiler, and the feed-cistern should be over the boiler, level with the highest part of the pipes in the house.

Dahlias (N. S. R.).—The plan recommended by "M. M." on page 150 is equally applicable to plants intended for growing in pots and for planting out. In either case the young Dahlias are grown under glass in their early stages, and protected from frost so long as it occurs, then they can either be planted in the garden or transferred to larger pots, according to the wishes of cultivators. Our correspondent prepares his plants mainly, if not entirely, for planting. We do not suppose that every tuber forms a plant, and only such as push growths when closely packed in pots or boxes need be potted separately. The plan is simple and good when properly carried out.

Planting Carpet Bed (A Young Reader).—We have never undertaken to propose methods for planting flower beds without a list of the plants at disposal before us, and in such cases we have occasionally suggested what we consider effective arrangements. We much prefer, however, for individuals to submit their own mode of planting, and if we can suggest any improvements we are willing to do so. You do not even mention the size of the beds. If you write again it will be necessary for you to send another sketch, with your own idea of arranging the plants.

Origin of the Keswick Codlin Apple (Native).—This excellent Apple was first discovered growing among a quantity of rubbish behind a wall at Gleaston Castle, near Ulverstone, and was first brought into notice by one John Sander, a nurseryman at Keswick, who, having propagated it, sent it out under the name of Keswick Codlin. In the Memoirs of the Caledonian Horticultural Society Sir John Sinclair says: "The Keswick Codlin tree has never failed to bear a crop since it was planted in the episcopal garden at Rose Castle, Carlisle, twenty years ago (1813). It is an Apple of fine tartness and flavour, and may be used early in autumn. The tree is a very copious bearer, and the fruit is of good size, considerably larger than the Carlisle Codlin. It flourishes best in a strong soil."

Tomatoes in Greenhouse (C. D.).—We doubt if you will raise plants in your greenhouse which you only "heat three times a week" by sowing so early, as the temperature of the house will not be sufficient for them for some time to come. The middle of April will be quite soon enough for sowing, but very much depends on the weather. The plants should be first established in 4-inch pots, then when these pots are filled with roots and the plants are a foot high with stems as thick as your finger they may be transferred to 9-inch pots. Rough fresh turfy loam of a rather heavy nature, with a sixth part of decayed manure and a twentieth part of bone-meal, will form a suitable compost. When the potting is completed a space of 2 or 3 inches should be left for periodical top-dressings of soil and manure as the roots protrude through the surface. Topping must be governed by circumstances. If the first trusses of blooms set, and other trusses continue setting, there is no occasion for topping the plants, and all side shoots may be rubbed out when an inch long; but if the flowers do not set, topping often becomes necessary for encouraging laterals for producing other flowers. We saw plants last year arranged 2 feet apart which had not been topped, and the stems, upwards of 12 feet high, clustered with fruit like ropes of Onions. In another house topping had to be resorted to, and by subsequent care in thinning an abundance of fruit was produced. For covering walls we prefer the plants on single stems.

Learning Latin (Discipulus).—It is quite impossible for us to say how long it will take you to "master Latin" by devoting an hour a day to the task. Possibly you will never "master" it, and we think you may employ your time with greater advantage by first mastering English. You will, perhaps, be surprised to learn that there are no less than seven errors in spelling in the short letter you have written to us, while in the division of the sentences it is very faulty. The two first words in your letter—"comenced studing"—are both wrong, and the same errors are repeated, which show that the spelling of those simple words is not a mere accident. We point out your shortcomings, not by way of reproaching you, as your educational deficiency may not be the result of any fault of your own. Possibly you may not have had the advantage of much school learning, but in a great measure have taught yourself. If this is so, we can only urge you to persevere until you can write a letter that would commend you to a nobleman or receive the approval of an editor. Gardeners who occupy the highest positions are not bad Latin, but good English scholars. Follow their example, and for some time to come do not allow Latin declensions to materially interfere with your endeavour to make yourself competent in the infinitely more important work of corresponding correctly and intelligently in your mother tongue. Regard this as the substance of your hopes; Latin as a mere shadow in comparison. In addition to studying English you may, if you have spare time, commence the study of botany, natural science, and agricultural chemistry; all of which are, we think, included in the work you name.

Grafting Wax (E. Edwards).—There are several kinds that require to be used warm, one of the most simple being equal parts of yellow wax and rosin melted together and applied when cool enough. The following has not the inconvenience of requiring to be applied warm, and may be prepared and used without being heated:—Yellow wax 1 lb., turpentine 1 lb., Burgundy pitch 8 ozs., mutton suet 4 ozs. Mix all together and mix thoroughly, and leave them to cool. Form the mass into small balls, as it will not stick to the fingers, and use them when opportunity offers. Liquid grafting wax is a very useful application, and is, perhaps, the most convenient for the purpose of all the mastics used for covering wounds and grafting. It is of the consistency of varnish, and is applied very thinly with a brush. Care must be taken not to lay it on thickly, for the surface hardens so rapidly the alcohol is prevented from evaporating. Rosin 1 lb., beef tallow 1 oz., spirits of turpentine one tablespoonful, alcohol (95 per cent.) 6 ozs. Melt the rosin over a slow fire, when melted take it off and add the beef tallow, stirring it

constantly; let it cool down somewhat, mix the spirits of turpentine little by little with it, and at last the alcohol in the same way. Should the alcohol be added while the mass is too hot, much will be lost by rapid evaporation; if, on the contrary, it is too cool, it will form a viscid lump, and must be slightly heated again. Stirring briskly is indispensable to mix the ingredients thoroughly. In well-corked bottles it keeps for years. If in course of time it becomes too thick, the addition of some alcohol will make it liquid again. For this purpose it must always be warmed. It is a good plan to put the bottle containing it in boiling or hot water to accomplish this.

Bantam Fowls and Woodlice (South London).—You ask if we have heard of the plan of the late Mr. Cuthill for getting rid of woodlice. We have not only heard of it, but have his description of the practice he adopted, which we give in case it may be useful to others as well as yourself. After mentioning many failures in attempting to destroy the pests, Mr. Cuthill states that, from trials made, "I am convinced that woodlice may be killed by the use of bantam fowls. This plan may be put in operation by anyone. I first had a hundred woodlice caught at a rubbish heap, and gave them to three bantams; they ate them up in something less than two minutes. I had these birds in attendance when turning over a rubbish heap, and not a woodlouse was allowed to escape, nor any insect, the bantams devouring everything. It will thus be seen that if bantams were encouraged and brought up in gardens they would effect much good; and I am of opinion that it will soon be found to be as necessary to keep bantams to kill vermin as it is to keep cats to keep down rats and mice. They will save various crops from injuries to which otherwise they would be exposed. They would scratch a little, to be sure, but so do cats, and if the smaller kind of bantams are kept (those about the size of a partridge) their scratching would do little harm. Perhaps some plan might be found to envelope their feet in socks at certain times of the year. The reason why gardens are generally nurseries for all sorts of insects is, because they are guarded by cats, traps, nets, &c., in such a manner that no bird can approach them. If it were not for the wild birds of the fields, the farmers' crops would be eaten up with vermin; and I think that birds have as much right to a little of the fruits of this earth as we have, for helping to keep destructive insects in check. It will be the gardener's own fault in future if he is much troubled with woodlice. This spring I had a temporary cage placed at the end of a twelve-light Cucumber pit; a brick was driven out in order to allow the ingress and egress of a large brood of bantams. I had those for this experiment from a fancier of the name of Dawson; they ate up every insect in less than a week. Another year I intend to have a hole in all the pits, and move the young bantams from one pit to the others. I have a rubbish corner where all the rakings, leaves, and general refuse of the garden are put. This place is enclosed with 4 feet laths all round, and a brood of bantams was put there. This was at one time the grand breeding place for all sorts of insects, but now it is the most valuable corner which I have. The moment an insect comes to the surface it is eaten up. I have had three full-grown bantams at large nearly all the summer (Sir John Sebright's Silver-spangled), and to see those birds with their hawk's eyes, walking about through the sheds, houses, Mushroom places, up and down the alleys of the pits, &c., picking up every crawling insect, is very satisfactory. One bantam is worthy fifty toads. I do not mean to say that in a general kitchen garden it would do for them to be at large at certain seasons; but even then I should make them quite welcome to a few cabbage or lettuce leaves, for the great benefit that is to be derived from their destroying every sort of insect except the slug and snail, which a few young ducks in the autumn and spring would soon remove." We think there is a great deal of sound sense in Mr. Cuthill's observations, and we are obliged to our correspondent for reminding us of their existence.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (M. H.).—As 90 per cent. of the Camellias in cultivation have originated from seed several varieties so closely resemble each other that they can only be correctly named by comparing them with others in a large collection. (J. W. Z.).—The flower of the Oncidium sent was too withered to be recognised. Please send another packed in damp moss.

COVENT GARDEN MARKET.—MARCH 18TH.

THERE are no changes of any importance to record this week.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples	½ sieve	2 6 to 4 6	Oranges	100	4 0 to 7 0
Chestnuts	bushel	16 0 0 0	Peaches	per doz.	0 0 0 0
Cobs, Kent	per 100 lbs.	55 0 0 0	Pears, kitchen ..	dozen	1 0 3 0
Currants, Red ..	½ sieve	0 0 0 0	,, dessert	dozen	2 0 6 0
,, Black	½ sieve	0 0 0 0	Pine Apples English	lb.	1 6 2 0
Figs	dozen	0 0 0 0	Plums	½ sieve	0 0 0 0
Grapes	lb.	3 0 6 0	Strawberries ..	lb.	0 0 0 0
Lemons	case	10 0 15 0	St. Michael Pines	each	3 0 7 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes	dozen	2 0 to 4 0	Lettuce	dozen	1 0 to 1 6
Asparagus	bundle	7 0 8	Mushrooms	punnet	0 0 1 6
Beans, Kidney ..	100	2 0 2 6	Mustard and Cress	punnet	0 2 0 4
Beet, Red	dozen	1 0 2 0	Onions	bunch	0 3 0 0
Broccoli	bundle	0 9 1 0	Parsley	dozen bunches	2 0 3 0
Brussels Sprouts	½ sieve	2 6 3 0	Parsnips	dozen	1 0 2 0
Cabbage	dozen	0 0 1 0	Potatoes	wt.	4 0 5 0
Capsicums	100	1 6 2 0	,, Kidney	ctw.	4 0 5 0
Carrots	bunch	0 3 0 4	Rhubarb	bundle	0 4 0 0
Cauliflowers ..	dozen	2 0 3 0	Salsafy	bundle	1 0 0 0
Celery	bundle	1 6 2 0	Scorzonera	bundle	1 6 0 0
Coleworts	dcz. bunches	2 0 4 0	Seakale	per basket	1 0 1 0
Cucumbers	each	0 6 1 0	Shallots	lb.	0 3 0 0
Endive	dozen	1 0 2 0	Spinach	brshel	2 0 4 0
Herbs	bunch	0 2 0 0	Tomatoes	lb.	1 0 2 6
Leeks	bunch	0 3 0 4	Turnips	bunch	0 4 0 0



PERMANENT PASTURES.

BEFORE land is sown with grass seed for permanent pasture it must be clean. Not simply because it is so desirable to have nothing but the Grasses and Clover of our own selection in the pasture do we give such prominence to this dictum, but as a matter of business—a question of profit and loss—it forces itself upon us. To intelligent practical farmers it has long been patent that a foul seed bed is not only followed by foul pasture, but it leads to an unmistakable subsequent loss. In the elaborate report of the judges of the farm prize competition last year they say, "We were shown one field in which a portion was not clean when laid, and though this was dressed twice with bones, and the rest only once, it was not half so good." They refer here to pasture of five or six years' growth, all of which that was sown upon a clean seed bed had a flourishing appearance, was rich in colour, and a well-knit sward.

If after the hot dry weather of last summer and autumn land is not clean we fear that nothing we can say will induce anyone to make it so. Who could let such favourable weather as we then had pass away without turning it to full account? Poor land that is foul with Couch Grass, Docks, Thistles, Sorrel, Crowfoot, and Plantain should now, as soon as the surface is dry enough, have the cultivator put over it twice, and then the thick beds of Couch must be forked out. This done, again use the cultivator, and follow with harrows and hand-picking; then plough, scarify, roll, harrow, and hand-pick till the land is as clean as it is possible to make it, and then at once sow it with White Mustard, using 20 lbs. of seed per acre. When the Mustard is in full flower it is at its best for being ploughed in as manure, and no time must be lost in doing so. As soon afterwards as a fine tilth can be had let the grass seed be sown, and as the Grass will be ready for autumn grazing in ordinary seasons sow Rape seed with it—4 lbs. of seed per acre. To sow seeds for permanent pasture in June or July is not according to the usual practice of confining the sowing to spring or autumn, avoiding summer sowing for fear of drought. We may safely venture to assert that as summer drought is the exception and not the rule in this country, it ought not to affect our plans, and it must not be forgotten that foul clay soil cannot often be cleared and got into condition much before midsummer. With a fine tilth we avoid the common error of covering seed too deeply; moderate harrowing, followed by rolling, leaving the seed near the surface, and with the soil pressed firmly about it.

Pure clean seeds of the best sorts are indispensable, about 40 lbs. per acre being the usual quantity. Since the publication of Mr. Faunce De Laune's essay "On Laying down Land to Permanent Grass," a radical change has been effected in the mixtures of seed merchants who make grass seeds a speciality. Mixtures may now be had without Rye Grass, but if its exclusion is not specially ordered there will inevitably be a large proportion of it and other inferior Grasses in the mixture. "To the presence of annual Grasses, and to this alone, do I assign the deterioration of the large majority of newly formed pastures. The seed mixtures usually supplied for laying down land to permanent pasture consist of so large a proportion of annual Grasses that the speedy deterioration of the pastures is inevitable," says Mr. Faunce De Laune. No doubt it was owing very much to the general ignorance of farmers about Grasses which led to so many inferior sorts being used. The vigorous appearance of the majority of seeds in the first season is not by any means to be taken as an indication of superiority; rather the reverse. It is the Rye and so-called annual Grasses which are usually so conspicuous, but it must not be forgotten that under favourable conditions Cocksfoot makes a growth of remarkable vigour, and it is certainly one of our very best Grasses for permanent pasture.

There are five sorts of Grass which may be regarded as indispensable—Cocksfoot (*Dactylis glomerata*), Timothy or Meadow Catstail (*Phleum pratense*), Meadow Foxtail (*Alopecurus pratensis*), Meadow Fescue (*Festuca pratensis*), and Tall Fescue (*Festuca elatior*). These constitute the real value of a pasture, and with some of the more dwarf-growing finer Grasses prove useful; of such the best are Crested Dogstail (*Cynosurus cristatus*), Rough Meadow Grass (*Poa trivialis*), Sheep's Fescue (*Festuca ovina*), and Hard Fescue (*Festuca duriuscula*). Another Grass included in most mixtures, and which finds favour because it makes both an early and late growth, is Creeping Fiorin or Marsh Bent Grass (*Agrostis stolonifera*). We avoid using it, because the fungus of ergot is so frequently found among its seed and the presence, often unobserved, in pastures of ergoted

Grasses, is a fruitful source of mischief to animals, many of the so-called mysterious cases of abortion being clearly traceable to it.

We append some of Mr. Faunce De Laune's selections with a substitute for Fiorin, which we have reason to believe he does not recommend now. Mixture of seeds for good or medium soils—Meadow Foxtail, 10 lbs.; Cocksfoot, 7 lbs.; Catstail, 3 lbs.; Meadow Fescue, 6 lbs.; Tall Fescue, 3 lbs.; Crested Dogstail, 2 lbs.; Rough Meadow Grass, 1½ lb.; Hard Fescue, 1 lb.; Sheep's Fescue, 1 lb.; Smooth Meadow Grass, 1½ lb.; Yarrow, 1 lb.; Perennial Red Clover, 1 lb.; Cow Grass, 1 lb.; Alsike, 1 lb.; Dutch Clover, 1 lb. Mixture of seeds for wet soils—Meadow Foxtail, 4 lbs.; Cocksfoot, 10 lbs.; Catstail, 3 lbs.; Meadow Fescue, 3 lbs.; Tall Fescue, 8 lbs.; Crested Dogstail, 2 lbs.; Rough Meadow Grass, 2 lbs.; Red Fescue, 2 lbs.; and 1 lb. each of Hard Fescue, Yarrow, Perennial Red Clover, Cow Grass, Alsike, and Dutch Clover. Mixture of seeds for chalky soils—Cocksfoot, 14 lbs.; Catstail, 3 lbs.; Meadow Fescue, 2 lbs.; Crested Dogstail, 5 lbs.; Hard Fescue, 4 lbs.; Sheep's Fescue, 4 lbs.; Yarrow, 2 lbs.; and 1 lb. each of Golden Oat Grass, Perennial Red Clover, Alsike, and Dutch Clover.

WORK ON THE HOME FARM.

Horse and Hand Labour.—Potato-planting will be done now as soon as the land will bear the broad-wheeled manure carts upon it. A clean Wheat stubble was ploughed for this purpose in autumn, and during winter a heap of farmyard manure has gradually been made upon the headland nearest a hard road. The manure will be turned and shaken apart before it is put in the carts, in order that it may be easily and quickly distributed over the surface: it will then be ploughed in. The horse hoe is then passed across the furrows, and the drills made 30 inches apart with the double-breasted plough drawn by one horse. Artificial manure is scattered along the drills, and the Potatoes are then put in. The manure used is a mixture, consisting of three-quarter cwt. nitrate of potash, half cwt. nitrate of soda, 2½ cwt. steamed bone flour, 2½ cwt. coprolite per acre. Snowflake, Dunbar Regent, Magnum Bonum, and Scotch Champion are the sorts which answer well with us under field cultivation. A successional crop of spring Tares has been sown, and the sowing of Barley, Oats, and late Peas will be finished as soon as possible. Let us remind all those having any trouble to get the land in order for spring Oats of our repeated advice in the autumn to sow winter Oats. The land then gave no trouble, the plant came strongly and well, and the growth now is remarkably forward and vigorous, and the dark green hue of the entire crop shows clearly how highly beneficial the spring dressing of artificial manure has proved.

Live Stock.—Ewes with forward lambs that are strong enough to bear exposure are now being put thinly about the meadows; but as young permanent pasture of the first, second, or third year becomes ready, begin folding upon it at once. In view of this, nitrate of soda was sown upon a forward piece or two of the seeds in February, and the first vigorous shoot is now ready for the sheep. Do not turn them out upon it, but pass them over it in folds quickly. Rye is also being folded, and if necessary some portion of the two-year seed leys must be used. There is plenty of early growth in the Italian Rye Grass which may be turned to excellent account as it is required. Due care must be taken to use lamb gates in the folds so as to let the lambs run forward for the first bite. If the weather should be wet and cold see that the flocks are driven to firm high-lying meadows at night, with some shelter from cold cutting north-east winds. Low damp ground is a prolific source of fluke and foot rot; a frequent change, too, is good for the sheep. Do not be hasty in turning out beasts or cows upon the meadows; the exercise of a little patience now will ensure a full bite for the stock, and we do not like them to have to ramble far for food. Before turning out try and gradually introduce strange cows which have now to join the herd. Put brass knobs upon the horns of the bullies, and do not trust weak animals with them till they are really out of the yards upon the grass.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.								IN THE DAY.		Rain
	Barometer at 294 and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass		
1885.											
March.											
Sunday	29.923	34.4	32.0	E.	39.9	43.0	23.5	69.2	21.9	0.022	
Monday	30.017	38.7	35.8	N.E.	38.9	45.5	33.2	89.2	30.3	—	
Tuesday	30.347	35.3	33.9	N.E.	38.8	42.4	29.8	72.8	24.2	—	
Wednesday ..	30.523	39.6	35.5	N.E.	38.4	44.8	32.7	66.7	25.7	—	
Thursday	30.495	36.7	35.0	N.	38.5	51.1	30.8	83.3	22.2	—	
Friday	30.507	41.9	33.4	N.E.	39.2	50.2	35.9	84.8	29.9	—	
Saturday	30.607	39.8	38.9	N.E.	40.2	51.8	38.1	87.3	37.8	—	
	80.346	38.1	35.8		39.1	47.0	32.4	77.8	27.4	0.022	

REMARKS.

8th.—Fog, especially dark from noon to 1.30 P.M.
 9th.—Fine day, some sun.
 10th.—Fine and cold; ice 0.1 inch thick.
 11th.—Fine and dry, but rather dull; clear night.
 12th.—Fine bright day.
 13th.—Cloudy early, then bright and fine.
 14th.—Dull early, fine and bright afterwards.
 A very fine week, rather colder than either of the two previous ones, and slightly below the average. Barometer pressure very high at the end of the week.—G. J. SYMONS.



COMING EVENTS

26	TH	Royal Society at 4.30 P.M.
27	F	Crystal Palace Spring Show (two days).
28	S	Royal Botanic Society at 3.45 P.M.
29	SUN	PALM SUNDAY.
30	M	
31	TU	
1	W	

ASPARAGUS CULTURE IN SPRING.



THE spring months, especially March and April, should be taken the utmost advantage of by all who wish to excel in Asparagus culture. Sowing, planting, manuring, and indeed every operation necessary to make Asparagus culture a complete success, must be done during the two months named. Those who annually lift many

roots for forcing will find the best way to keep up the supply is to sow seed every spring. Those who do not know how easy it is to raise young plants and form new plantations may be under the impression that it is waste of good roots to lift them and after forcing throw them away, but we do not find it so. One ounce of Asparagus seed will yield some hundreds of plants; it may be sown like Onion seed in light rich soil, and about the first week in April. As the young roots will only be in the seed rows until next spring, 18 inches will be found to be sufficient space between the rows, and the seed should be sown thinly that the young plants may stand a few inches from each other. At times we have had them come rather thickly, but the young roots at the end of their first season were not so finely developed as those allowed more space.

Planting out the young roots is an important spring operation, and it is possible to make a great mistake in it in this way. One spring not long since the weather was very fine during the first week in March, and the soil was in excellent condition for planting. Under these circumstances we were induced to lift and transplant about half our batch of one-year-old Asparagus roots. They could not have been better, but after this and before March was over the weather became very cold. However, considering the careful way our Asparagus roots were planted we thought they would be all right, but they were not, as more than half of them failed to grow. The other half of the seedling roots were not lifted at that time, but remained undisturbed until the first week in April, when they were planted like the others, and no failure occurred. We were forced to the conclusion that this was the right time to plant, and we have since proved it to be perfectly correct, as the greatest success has attended young Asparagus roots when transplanted the first week in April.

Probably if the crowns of young Asparagus roots were examined now the young growths would be seen starting, and some might be induced to begin planting, but a check would be sure to be the result. A young stem half an inch in length is far more likely to be injured at the present than those 1 or 2 inches long in the more genial month of April.

It is no use trying to grow first-rate Asparagus in poor and shallow soil. The roots, it is true, do not penetrate very deeply, but we find shallow soil dry much more quickly in hot weather than when it is deeply trenched, and as it dries the plants, especially when young, are sure to suffer. Trench the ground, but subsoils of clay need not be brought to the surface. Turn them over, and in doing so add plenty

of old vegetable refuse. The surface soil for the reception of Asparagus must be rich and not too heavy. Road scrapings, sand, and charred refuse may be added to it with much advantage. In planting do not have beds with two or three rows and a large vacant space between, but have the rows following each other without any attempt at making a bed. The roots may be planted 2 feet apart each way, and where ground is plentiful this distance may be increased 6 inches or a foot, no attempt being made at planting until the ground is quite ready. If it is trenched now fork the dressing into the surface immediately before planting. Lift the crowns from the seed rows with a fork carefully, and do not break any more of the roots than can possibly be avoided. Where each root has to be planted open a space with a spade 10 inches wide and 6 inches deep. In the bottom of these place two handfuls of bone manure with a little sand over it, then the plant with the roots untwisted. Shake more sand over the roots, and finally finish off by filling up to the level with the surrounding soil. If growth has commenced do not break any of them, and do not keep the roots longer exposed to the air. The holes must be ready before beginning to lift the roots, and then they need not be out of the ground or uncovered more than a few minutes.

We have now disposed of the seed-sowing and planting in spring, but there remain the old plantations for treatment at this time, and the main secret of a good Asparagus plantation is in the beginning and substantial preparation. Surface dressing is the only assistance which can be given to old Asparagus roots. Any time in March is suitable for applying these, as they will benefit the produce when it comes in April and May. In top-dressing a good way is to draw a little of the surface soil from the crowns and apply a mixture of sand, wood ashes, and Beeson's manure, putting the sand and ashes in about equal parts, and the manure at the rate of 2 lbs. to three bushels of the mixture. Roots will be permanently improved by being top-dressed with this, but when only a stimulant is required we should apply a mixture of soot and salt on the surface of the soil. Where numerous blanks have been found in old plantations through the roots dying from old age or bad cultivation it will never pay to retain the few which remain, and as the cause of the failure may be in the soil not having been properly prepared at first, it will be of no use trying to fill the vacancies with new roots. The more satisfactory way would be to cut from the old roots so long as they produced any heads, then throw them away, after having formed a new plantation in another quarter. Young Asparagus plants if well attended to will furnish good heads in three years from the time the seed is sown.—A KITCHEN GARDENER.

GRAPE-THINNING.

Now that the season is advancing and Grape-thinning is again coming on us in quantity, some, of course, having already been done, it may not be out of place, and may prove useful to young men beginning thinning, if a few notes on the subject be given.

First of all, then, I would say to all beginners, Be impressed with the idea that too much care cannot be taken in regard to preventing any touching or rubbing of the young tender berries. On no account handle the bunches. A forked stick about the thickness of an ordinary pen-holder, clean and smooth, and long enough to enable the holder to catch the main stem of the bunch with the fork without coming against the berries with his hand should be used. Great care should be taken when inserting the stick among the berries that it be done gently. The bunch so held can then be turned as desired, and cutting out the berries quickly performed. When thinning, attention must be paid to reserving the largest berries; where three are clustered together on a twig of the bunch, and only one is wanted to remain, cut off the two side ones.

The centres of bunches intended for late keeping should be well thinned out. Only experience can dictate how to thin the various kinds properly, but it may be remarked that great

assistance may be afforded beginners in thinning if they notice the footstalks of the berries; when long as many more berries may be left, as they rise up when they swell. Short-stalked stiff kinds, such as Lady Downe's, require to be thinned so that they look thinner than Black Hamburgs require to do, as the latter are long-stalked and can make room for themselves, while the Lady Downe's would just become quite crowded. Of course it is of use to remember that Lady Downe's and Muscats are liable to lose a few berries by scalding, as a little allowance may be made for that, but with cool treatment during the scalding period very few need be lost that way. Close attention is needed when thinning Grapes, so that some other bunch may not be getting polished by contact with the head or arm.

Gros Colman, Duke of Buccleuch, and Canon Hall, when it is properly set—a not very frequent occurrence unfortunately—all require to be thinned to an extent that hardly any beginner can bring himself to do at first, consequently they have often to be gone over again, until room for their noble berries is obtained. Muscats should not be thinned until fully larger than other kinds require to be, as it is sometimes difficult to determine which are the properly set berries. A good syringing the night before commencing to thin, especially with such varieties as Lady Downe's and Alicante, is a great help, as it clears away the remains of the flowers.

Great care, patience, and perseverance are required in thinning; but practice makes perfect with it as with other operations.—X.

TRENCHING GROUND.

I HAVE read with great pleasure, and I hope some profit, the various opinions on this important operation which have of late appeared in your valuable Journal. I have been an enthusiast in trenching land for many and various crops, but for Strawberries more particularly. A few years back I was induced, very reluctantly, through pressure of work, to dig the land deeply and plant a break of Strawberries. After being planted in August they grew most luxuriantly, and when they came to perfection they were wonderfully productive. This put me to the blush, and I thought of the labour I had wasted and the time taken up in a very busy season. I have now lived to learn better, and am quite with Mr. Iggulden in all he says except one thing—that is, he tells your readers the gardens at Burghley are so productive that we have only "to tickle the surface." There he is in error. It is quite true that I dig less than most gardeners, generally preferring to cultivate the land with a tool we call a cultivator. Mr. Iggulden tells us that his garden is 4 acres, and that he has served one, and sometimes two families. Here our gardens are 14 acres, and I have all this winter supplied eight noblemen and gentlemen's kitchens, so that this "tickling" business is not the ridiculous thing that Mr. Iggulden appears to make it.

I may add that trenching for spring Broccoli is a most dangerous system, but bear in mind I have never done this for twenty years past, always preferring late planting in firm land on the crowbar system.—R. GILBERT, *Burghley*.

It is not my desire to take up valuable space in the Journal with anything further associated with the good old practice of trenching than merely to elucidate the benefits of deep tilth for vegetables, which has, according to my observation, at all times given a substantial reward. It is true I did not add Beet to the many other crops which do well in deep cultivated land. I now do so, and by sowing about two months later on soil similar to what the Parsnips did so well in then these roots were excellent, with clean growth, not thick, quite free from fibre, and with none of the objectionable "stringiness" so common to roots sown in shallow soil. Three roots to one could not be grown on the same space as those referred to on the fresh but comparatively poor bottom spit of soil turned to the surface. The crops were not thinned so much as the (at first) more vigorous crops on the richer surface, and we had length of roots more tender, free from forking, which were much admired by an experienced French cook. So were the Cabbages, Potatoes, Leeks, Lettuces, &c., on the deep newly turned-up soil. I have, for special purposes, trenched three spades deep, and never regretted doing so except once, about twenty years ago, when some inert soil was inadvertently brought to the surface, which was objectionable for a season. The cost of the experiment has also been of moment to me, and often having to do my labour by the piece I at no time had reason to regret any extra manipulation which gave deep tilth. I never considered it a waste of time and means, but quite the reverse.

Regarding great men being radically wrong, I do not believe in the infallibility of the greatest of men. Like our preceptor I, also, had fair opportunities of contrasting the practices of growers. While being employed when a youth in London market grounds it seemed a matter quite free from mystery that cultivators who dealt liberally with their ground were the men who reaped the highest reward, and in some of these highly cultivated vegetable farms one might push a spade down nearly 3 feet into rich mellow soil. All marketmen with whom I have been acquainted place much value on deep land.

That Broccoli crops are often destroyed in private and not in market gardens is no exaggeration, and I here admit that I often have put Broccoli into the ground with an iron rod because of the hardness of the soil, and the

Broccoli has, by its sturdy habit, resisted the severest frosts known in this country. Still, that is no reason why we should not trench deeply for vegetables which have to resist drought in summer. Then the question about fruit trees. If I wished free succulent growth and bulk in timber I would also trench deeply for them; but to secure abundance of healthy blossom, to set well and give a good harvest of fruit, I would drain well, and probably make the ground as firm as possible, and keep the roots near the surface. However, the size of trees required, altitude, nature of soil, and latitude would direct in a great measure my procedure when planting and treating these to secure a fruitful habit. When I wish to save seeds of vegetables I do not aim at deep tilth, but place them in a warm dry position, and prefer, as a rule, shallow and firm soil. It is not always in the power of cultivators to expend more labour on and add the various materials recommended by me, and some are kept very short of manure; but if they adopt a system of deep cultivation difficulties are often met and conquered. Here ends my reply to Mr. Iggulden's remarks



Fig. 45.—*Stylidium amœnum*.

on what I have adduced as a remunerative and satisfactory system of manipulating soil for vegetables.—M. TEMPLE.

[Another article on this subject is crowded out.]

STYLIDIUM AMCENUM.

This plant is one of several species of the same genus from the Swan River colony, and was, we believe, collected by Mr. Drummond, who sent over so many of the fine plants of that country which now ornament our greenhouses and conservatories. The *Stylidium amœnum*, without the gaiety of some New Holland shrubs, is decidedly pretty, and must be a desirable addition to this class of plants. It blooms in June. The *Stylidium nudum* of Lindley is considered to be synonymous with it.

It is a perennial herb, having at the surface of the soil a rosulate

tuft of leaves, which are spathulate, $2\frac{1}{2}$ to 3 inches long, tapering to the base, shortly acute at the apex. They are paler on the lower than on the upper surface, and have a broken cellular hyaline, scarcely denticulate, margin; when fresh they are scattered with transparent dots; the veins are dichotomous, scarcely anastomosing. From the centre of this tuft rises the erect scape, 6 inches high, terminating in the upper half in a pyramidal many-flowered raceme, below which is a whorl of linear pointed bracts. The rachis, pedicels, and calyx are furnished with hairs tipped by black glands. The flowers are large, rose-coloured, measuring five-eighths of an inch in diameter. The pedicels are shorter than the calyx, subtended by small lance-shaped bracteoles. The calyx, besides its gland-tipped hairs, is marked with red dots and streaks; its teeth are linear-oblong obtuse, those of the lower lip three in number, narrower than the two forming the upper lip, all being shorter than the ovary. The corolla is three times as long as the calyx teeth; the upper lip consists of four oblong blunt, spreading lobes, the lower is very small, with a gland-like deltoid prominence at the base; a pair of short lateral ears, or projections, which become very indistinct in the dried state, and a subulate petal-like point; the throat is furnished with a crown of six clavate processes. The column is flattened at the base, becomes tapered upwards, and is bent twice in the usual way.

The Stylidium should be grown in sandy soil with a preponderance of peat earth, and require to be very carefully drained, for though they like a good supply of water while growing they cannot endure stagnant moisture. A warm, dry, and airy greenhouse is the best situation for them. Many of them are very pretty, indeed showy plants; and, in all, the structure of the flower, and the irritability of its column, are so curious, that they have good claim to the small space they occupy.—M.

ORANGES OUT OF DOORS.

MR. BOND asks for information respecting the amount of protection given to the old Lemon tree on the walls of Dunster Castle. Around it is a wooden frame which in the winter supports a couple of glass lights, the whole arrangement being like a miniature greenhouse. The old tree bears freely every year. The situation, although on a gentle eminence, appears warm. The top of the knoll is flattened and used as a tennis lawn. Shrubs, with Pelargoniums at their base, are planted around this lawn. The bedding plants are left out all through the winter, and for the last four or five years have been uninjured. The Fuchsia bushes and the Laurustinuses are as healthy and vigorous as possible. Down in the quaint old town a grand plant of *Bignonia grandiflora* climbs rampantly over a porch facing a dusty street. The grand Orange bushes at Mount Edgumbe are only removed into the unheated orangery late in the autumn, and are brought out before April has fulfilled its course. The Orange garden is the strongest feature of our old gardens to many. The load of golden fruit and pretty virginal blossoms is one of the noblest creations. I am sure that all along the south coast Oranges would succeed on the south walls of villas, particularly if protected from the east by a projecting conservatory, buttress, or some other ornamental contrivance. In September, and all through the summer, the little trouble that covering with glass lights in winter gives would be repaid a thousandfold. Correspondents are always suggesting things that are not so well known as they ought to be, or not grown as they ought to be. Do say, please Mr. Editor, that this is one.—C. A. M. CARMICHAEL.

[Orange trees are well worth growing in sheltered positions in the south of England for ornamental purposes, and in light well-heated structures for ripening delicious fruit—much superior to that sold in markets.]

MANAGEMENT OF HORTICULTURAL SOCIETIES.

REFERRING to Mr. Cox's observations on this subject, I consider there should have been no restrictions in the schedule of the Liverpool Horticultural Association, for, if I am not mistaken, the gardeners of Liverpool contend that they are capable of holding their own against all comers. From what I have seen of the wonderful productions that have been staged at this Society's exhibitions, I am of opinion that their contention is fully borne out by the fact. In a few solitary instances they have been surpassed by better produce, but there has been no discredit falling upon the losing competitor. I do not agree with Mr. Cox that being beaten in one or two classes by the produce of others from more favourable localities is discouraging, or even a barrier to the progress of horticulture, in the district in which such defeat takes place. Competition and defeat nerves the exhibitor to greater energy, effort, and determination. I have always found that defeat and failure creates a tendency to think intelligently and observe with diligence, this in the end leading to honour and success. Continued success, especially with a restricted schedule, promotes the very opposite.

Mr. Cox refers to vegetables, but I think he will readily admit that the produce staged by local competitors has been superior in quality and set up in a better condition during the past two or three years, than was the case at the earlier shows held in Sefton Park. Perhaps your correspondent will explain what has been the cause of this improvement.

What was the condition of the vegetables staged by local competitors, say at the first summer show? Were they not coarse and very badly staged in comparison with the collections exhibited by Messrs. Iggulden and Richardson, the only two competitors from a distance, if my memory serves me right? If Mr. Cox is not prepared to make this admission there are other gardeners and vegetable exhibitors who will; in fact, I remember one remarking to me that "we have something to learn both in staging and growing vegetables before we can compete successfully against well-known vegetable exhibitors."

To return to the schedule. Even if the classes had been open to all, then the schedule is sadly restricted. Does Mr. Cox think that horticulture in the neighbourhood of Liverpool is advanced by provision being made only for nurserymen and professional gardeners? This is the state not only of the schedule in question but of that issued by many societies. Shrewsbury is commendable in this respect, and provides for amateurs who do not profess to keep a gardener, and ample provision is also made for cottagers. The exhibits from the latter alone fill a very large tent, and are generally of good quality, showing that the Society has created a general love for the cultivation of fruits, flowers, and vegetables. If schedules made provision for a greater variety of competitors instead of being limited to one or two classes, the love for gardens and gardening would advance much more rapidly than will ever be the case under the system at present in vogue.

There can be no doubt that the cheap periodicals that are weekly issued on gardening are rapidly creating a wider and deeper interest in horticulture, and this will deepen and spread, I have not the least doubt, for proof appears almost daily to confirm this belief; and if horticultural societies are to do their share in this work they must be managed on broader, wider, and more liberal principles than is the case at present.—A NORTHERNER.

AMARYLLISES AT CHELSEA.

THE Amaryllis house in Messrs. J. Veitch & Sons' nursery at Chelsea now forms an exhibition of great interest, and attracts a large number of visitors. The advance that has been made with these handsome plants in recent years is wonderful, and anyone who might see the old *Hippeastrum equestris* as it is now flowering at Kew would scarcely think it could be the progenitor of such a magnificent race. The most careful attention has been paid to the naming of the most distinct forms raised from the first hybrids, and by a continued selection and intercrossing the flowers have been vastly improved in form and colour, and the variations increased. Such beautiful forms are every year exhibited and certificated that it seems almost impossible that much further advance could be made; but Messrs. J. Veitch's experienced foreman, Mr. Heale, thinks otherwise, and proves by the number of very distinct novelties this year that there is more work to be done amongst the Amaryllises.

The spacious span-roofed house devoted to these plants was described last year, and it need only be added that the plants are arranged in a similar manner—namely, in a central and two side beds. There are about 2000 flowering bulbs, and there are over 1500 scapes showing, in some cases two or three from a bulb; while the number of flowers in a head varies from two to four, a large proportion having the latter number. This indicates the strength of the plants, and the same is also shown by the size and substance of the individual flower. The colours are most varied, shades of crimson and scarlet being very abundant, salmon and pink being also represented in several varieties. Those with a white ground and crimson or scarlet streaks and spots are especially distinct, while the parti-coloured forms are similarly attractive.

The following are some of the best of the—

NEW VARIETIES.

Climax.—The name chosen for this variety indicates the opinion held by its raiser with regard to its merits, and it need scarcely be said that title is well deserved. The flower is of magnificent proportions— $8\frac{1}{2}$ inches in diameter, with petals 3 inches across and beautifully rounded, the colour being a very rich shade of crimson scarlet. These grand flowers were produced by a small bulb in a 48 size pot, and have been removed so that the plant should not become too exhausted, as with another season's growth still finer results are confidently expected.

Basilisk.—Another handsome variety, with very large bold flowers; the petals nearly 4 inches in breadth, rounded, and bright scarlet. It is of very strong free habit, having two scapes with three flowers each.

Mark Tapley.—A showy and beautiful variety, the flowers tipped and streaked with crimson on a white ground, and with a white or greenish central bar in the petals. Very strong, four flowers in a scape.

Semiramis.—Distinct in colour, of a bright salmon scarlet hue, and a central white bar; two spikes of four flowers each.

Vestal.—A beautifully formed flower, white, spotted and streaked with crimson, the petals broad and finely rounded. Very elegant.

Lord of the Isles.—A charming variety, the flowers of medium size, but excellent in form and intense rich scarlet, the colour extending to the centre of the flower. It has a vigorous scape of four flowers, and will undoubtedly become a favourite both on account of its colour and form.

Picotee.—This will probably be the parent of a distinct type of Amaryllis, as it is quite a break from those previously obtained. The flower is of medium size, white, with a narrow margin of crimson, similar to its elegant namesake. This has a curious appearance, and if the band of colour could be broadened and intensified, and the white ground rendered clearer, something of a very remarkable character would be obtained.

Roderigo.—Showy and free, bright scarlet, with a white central bar in the petals. The plant has two scapes and four flowers each.

Almadine.—One of the parti-coloured type—that is, with the lower half of the petals crimson and the upper half whitish green. Distinct and effective.

Nubia.—Of medium size, rich warm crimson in colour, with white centre and bars. The petals are rather narrow, but the flowers are produced four in a head.

The Queen.—A remarkably handsome variety, one of the best in distinctness. The flowers are large, of fine proportions, the ground pure white, quite free from the green tint so noticeable in many varieties, irregularly streaked with crimson, forming a beautiful contrast. It is very free and strong, having two scapes with four flowers each. This will take a foremost place amongst favourite varieties.

Charmer.—This is somewhat like the above, and there are several others which may be included in the same group, such as Jason, also a variety flowering this year for the first time. They differ, however, in the size and form of the flowers, and *The Queen* is fairly entitled to first rank amongst them, though all are beautiful.

A dozen of the most striking of the early-flowering varieties have been named in the preceding notes, and others will deserve attention later on as they expand. Last year's and older varieties are strongly represented, and they well maintain the good opinions formed of them when they made their first appearance. Very notable amongst these is the brilliant scarlet *Empress of India*; then follow *Henry Little*, warm purplish crimson, very distinct; *Prince Leopold*, dark crimson scarlet; *Zelia*, white streaked with pink; *Dr. Hogg*, rich scarlet; *Lady of the Lake*, white with red streaks, handsome; *Corsair*, intense scarlet; *Virgil*, creamy white with crimson spots; *Oriflamme*, brilliant crimson scarlet; *Clarinda*, white with crimson dots, fine form; *Corregio*, rich scarlet; and *Ceres*, white flushed with crimson.

For several weeks there will be a continuous display, but visitors cannot choose a better time for an inspection than the present week, as the number of flowers expanded is very large.

HAARLEM BULB SHOW.

Of all familiar flowers those known as "Dutch bulbs" are, perhaps, the most popular in this country. In the autumn the so-called "roots" are imported by millions, and consignments of many tons are brought over by the Harwich steamers. At the present time they are flowering by hundreds in the greenhouses of the affluent, while from half a dozen to a dozen Hyacinths cheer and brighten humbler homes innumerable in busy towns and rural villages. In the course of a few weeks beds and borders will be sweet and gay with Hyacinths, Tulips, and other bulbous plants; indeed, without "Dutch bulbs" British homes and gardens would be shorn of a characteristic charm in spring. Then in England we have magnificent exhibitions of "Dutch bulbs," and the excellence of culture displayed is such as astonishes even the expert Dutch growers; but these great floral caterers also have their shows, and nowhere could they be more appropriately held than in the quaint old town of Haarlem, the head centre of the great bulb industry; and a general description of one of these shows will perhaps not be uninteresting to the readers of the Journal.

Fortunately Bulb-land is easily reached. Eight o'clock at night at Liverpool Street, a quick run to Harwich, a comfortable glide in an excellently appointed steamer, and we are at the quay at Rotterdam at nine o'clock next morning: a train appears to be in waiting there, and we complete the last stage of our journey with ample time for a hasty glance through the Exhibition before the opening ceremony takes place at one o'clock. Before referring more particularly to the latter, it may be well to give an idea of the general effect of the Show, and to say at once that it was probably the finest ever yet held in this or any other country of bulbous plants alone. The present being the twenty-fifth year of the formation of the Bulb Growers' Society of Haarlem, the promoters made every effort to render the Exhibition an improvement on any of its predecessors, and the result, both as to the quantity and quality of the flowers, was most imposing. The Show was held in a large public hall near the Great Church; but spacious as it was, the crowds of visitors who poured in throughout the day soon filled it, and rendered the task of taking notes one of extreme difficulty. The mode of arranging the exhibits did not differ in any material degree from that followed in England. A stage about 4 feet high ran round the interior of the building, but the classes for Hyacinths were so numerous and well filled that they occupied nearly the whole of it, other exhibits finding places in the smaller rooms attached to the main building. In the centre of the hall, the floor of which had been covered with turves, were arranged the classes for Crocuses, Scillas, Lily of the Valley, Snowdrops, &c., and altogether they produced a very fine effect.

The opening ceremony was performed at one o'clock by Mr. J. H. Krelage, the respected President of the Society, who referred to the rapidly increasing development of the bulb industry, and to the value of such exhibitions as the present for bringing prominently into public notice the many beautiful flowers cultivated by the members of the Society. The latter subsequently presented to Mr. Krelage a handsome piece of silver in recognition of his invaluable services to the Society since its formation twenty-five years ago. This being concluded, we were at liberty to make a closer survey of the Exhibition, first turning our attention to the

HYACINTHS.

No less than twenty-eight classes were provided for these, and as there was considerable competition in every class it can readily be imagined that the display of these flowers was magnificent. With the exception of one class all the Hyacinths were shown in 4 and 5-inch pots, and were distinguished throughout by bright colours and compact trusses rather than by particularly large spikes. Nevertheless, there were some notable exceptions to the rule, although probably no individual group embraced so many flowers of such large size as those shown by Messrs. James Veitch

and Sons at the London exhibitions. But all were well grown, and of good size and colour. The groups competing in the principal class for Hyacinths formed one of the most striking features of the Show. They were to include eighty single and twenty double varieties, and the prizes were a gold medal and twenty-five guilders (£2. 1s 8d.) for first, a gold medal for second, a silver-gilt medal and ten guilders for third, and a silver-gilt medal for fourth. The first prize was awarded to Messrs. J. H. Kersten & Co., Haarlem, the second to Gebroeders Byvoet, the third to Messrs. E. H. Krelage & Son, and the fourth to Mr. T. D. Zoicher. It could have been no easy matter to decide the question of supremacy between the two first-named exhibitors, so equal were their collections; but, doubtless, all those acquainted with the points of excellence which a Hyacinth should exhibit would have approved of the Judges' award in this case, for while several flowers in Messrs. Byvoet's collection were much larger than those in the first-prize group, yet there were many considerably smaller. Messrs. Kersten's Hyacinths were marvellously even, the spikes being of good size, the trusses without exception dense and compact, and the colours remarkably clear. The varieties shown were those which have long been familiar to English growers, and it is therefore needless to particularise them. The plants in the second-prize group were also good examples of skilled culture; but they were certainly not so even as the former, one or two faulty flowers being included. The third and fourth-prize groups included smaller flowers, but otherwise good. Even finer flowers than in the class just alluded to were those in competition in the class for forty single Hyacinths, Gebroeders Byvoet taking the gold medal offered for first prize with a splendid group, the spikes being large and dense. A very fine collection, too, was that of Messrs. M. Van Waveren & Sons, which was awarded the second prize, every spike being dwarf, of good size, and very compact, a result produced by sound bulbs and skilful cultivation. Messrs. Kersten were awarded the third prize.

In five out of the six succeeding classes Gebroeders Byvoet were placed first, a marvellous result when it is considered that they had a very large number of flowers competing in other classes. To produce such results as these not only must great cultural skill be exercised, but the bulbs grown must be of the finest quality. Messrs. Byvoet have, however, long been famous for both. The other prizewinners in these classes were the same as in the others, with the addition of Mr. G. Van der Horst, P. W. Voet, and Messrs. Ant. Roozen & Son, who showed some splendid flowers. In other classes, too, the growers already mentioned were to the fore, but it is not necessary to refer specially to each class.

In the class for new varieties Messrs. Krelage were placed first with *Sophie Christine*, a fine rose-coloured Hyacinth with very large bells. Messrs. Kersten were awarded second prize for a fine pure white variety, named *Correggio*; it has a very large spike, large bells, with a compact truss, and should be a useful addition to the whites. Third prizes were also awarded to Messrs. Krelage and Kersten, to the former for a fine double red, the latter for *City of Haarlem*, single yellow.

The Hyacinths in water were a great feature, all being splendidly grown. In the class for seventy-five varieties, sixty single and fifteen double, the first prize of a gold medal and twenty-five guilders was most deservedly awarded to Mr. W. T. Blom, Overveen, for a superb collection, the flowers being little, if anything, inferior to those grown in pots. Very fine also were the second-prize group of Mr. P. Van Velsen, but these were the only two collections shown. In the class for single and double Hyacinths in water Mr. T. A. Faase was placed first with a grand collection of large and compact Hyacinths, the third prize being awarded to Mr. Blom. Although these bulbs were all grown in glasses, it is, we believe, the custom of the Dutch exhibitors to place the glasses in pots of soil, and to thus grow them until they come into flower, the object being to prevent the spikes from running up tall and weakly. In the case of those under notice the plan had answered admirably, the plants being as dwarf as could be desired, and the trusses of bloom magnificent. Minor classes were also provided for Hyacinths grown in large pans and for miniature Hyacinths, the majority of the prizes being secured by the growers already mentioned.

TULIPS.

A large number of classes were provided for these, and some very fine flowers were shown, but they were very much smaller than those usually seen at the South Kensington and Regent's Park shows; they were, in fact, smaller proportionately than the Hyacinths, but were generally of good colour and substance, the principal class provided being that for 100 pots, eighty single and twenty double. The first prize was a gold medal and 25 guilders, and it was won by Messrs. L. Van Waveren & Son, who showed Tulips splendidly throughout. Their plants were dwarf, flowers of medium size and very rich in colour. Mr. Polman Mooy was placed second, and Messrs. E. H. Krelage & Son third. The collections consisted chiefly of such well-known excellent sorts as *Proserpine*, *Joost van Vondel*, *Paul Moreelse*, *Vermilion Brilliant*, yellow and white *Pottebakker*, *Wouvermans*, and many others well known to English growers. For fifty pots of single Tulips Messrs. M. Van Waveren & Sons were deservedly adjudged the gold medal for a splendid group, *Polman Mooy* again being second, and Messrs. L. Waveren & Co. third. The last-named exhibitors also secured first honours for fifty pots of double Tulips, Messrs. Krelage & Son being second. For twenty varieties of Tulips in glasses, sixteen single and four double, Mr. C. de Lange was adjudged first prize, Messrs. L. Van Waveren and K. de Waal Malefyt securing the others. These, like the Hyacinths, were splendidly grown, and in every respect equal to those grown in pots. For sixty Tulips in twenty varieties, three bulbs in each glass, Messrs. T. D. Zoicher and L. Van Waveren were the recipients of the medals, showing fine flowers. Medals were also given for double and late Tulips, the latter being particularly good for the present early season of the year. Messrs. Van Eeden & Co showed the premier collection.

NARCISSI.

There was but a small display of these, six classes being provided; neither was the competition very keen, but some good collections were shown. In the principal class for *Polyanthus Narcissi*, Messrs. T. D. Zoicher & Co. secured first honours very easily, showing some good flowers of *Her Majesty*, *Bazelman Major*, *Grand Monarque*, and other popular sorts. Mr. C. Zaadmoordyk was second. Messrs. P. Van Waveren and Bakkum took the

medals in the remaining class for Polyanthus Narcissi. Border Narcissi were fairly good, but they were a comparatively small feature of the Show. In the principal class, that for fifty pots of single and double varieties, Messrs. E. H. Krelage & Son secured the gold medal, staging several varieties of the Incomparabilis and Leedsii sections, bicolor, bicolor Empress, Bulbocodium, Poeticus, and others. The same firm, together with Messrs. Polman Mooy, M. Van Waveren, and P. Van Velson & Son, being the recipients of the other principal prizes.

MISCELLANEOUS BULBS.

Not the least of the many attractions of this grand Show were the exhibits of such charming spring flowers as Crocuses, Scillas, Anemones, Fritillarias, Chionodoxa, Pœonies, Cyclamens, Snowdrops, Imantophyllum, and Amaryllis, classes being provided for all of them. Handsome groups of all the plants named were arranged in the centre of the building, and materially enhanced the effect. The Amaryllises in particular were very fine, three excellent groups being staged. The first prize was taken by Mr. C. Van Eeden, the second and third by Mr. V. Schertzen. The flowers were mostly of good size, but there were very few good dark kinds. Many handsome bouquets of bulbous flowers were exhibited, too, and plants of Tropæolum tricolorum trained on trellises in shield and umbrella shape were very striking, being densely covered with bloom.

In addition to the medals given by the Society, special prizes were offered for competition under the following circumstances:—

About two years ago the "Gartenbau Verein," in Hietzing, near Vienna, had a show of Hyacinths, and was assisted very greatly by many Dutch bulb growers. In return for this the "Gartenbau Verein" offered to the Haarlem Bulb Society one gold, one silver-gilt, and one silver medal, with liberty to offer these prizes as the Committee should think fit. It was decided to make champion prizes of them—viz., the gold medal to the exhibitor who received the greatest value in prizes for Hyacinths, the silver-gilt medal for Tulips, and the silver medal for Narcissi. Mr. Byvoet secured the first, Mr. L. Van Waveren the second, and Mr. Krelage the third. It is almost needless to add that the Show has been in every way a great success. Under the able direction of Mr. Krelage, assisted by an efficient and hard-working Committee, all the arrangements necessarily requisite for an Exhibition of such magnitude have been carried out in a most satisfactory manner. The Show was thronged with visitors during the whole of its duration, no less than 6000 persons attending it on Sunday, many coming from Amsterdam, Rotterdam, and the Hague. The Dutch are enthusiastic bulb admirers, and they have certainly every reason to be proud of the Exhibition just closed.

Such was the Show, but a greater show is pending. To see Bulb-land at its best visitors should reach Haarlem about the middle to the end of April, when acres of Hyacinths in great blocks of colour, from purplish mauve through all the shades of blue to lilac; from glowing crimson to rosy red, and softer tints to blush; from pale sulphur to orange yellow, with masses of snowy whiteness; dazzling stretches of Tulips in all the colours for which these flowers are famed—for seeing these and other flowers "at home," that is the time. Numbers of persons "run over" then, and more might do so with pleasure to themselves. They may travel for very little money nowadays, and see what they cannot see in their own land. In such a steamer as the "Adelaide," and a fine night, the trip will be enjoyable, the change beneficial, and the most courteous attention may be relied upon from the Dutch growers, who ever give a cordial welcome to visitors of kindred tastes from England.



THE President of the ROYAL HORTICULTURAL SOCIETY has nominated the following gentlemen Vice-Presidents for the ensuing year—viz. Sir P. Cunliffe Owen, K.C.M.G., C.B., C.I.E.; Robert Hogg, LL.D. F.L.S.; Professor M. Foster, F.R.S.; and George F. Wilson, F.R.S.

— AT a general meeting of the ROYAL HORTICULTURAL SOCIETY held last Tuesday, Wm. Payne, Esq., in the chair, the following candidates were elected Fellows—viz., Miss Allender, Mrs. R. D'cker, Mrs. Eliza Dobson, Charles Godson, W. E. Harrison, J. G. Jarvis, Mrs. Moul, J. Nelson, J. Ogle, H. R. Philipps, J. Pricc, W. C. Toulmin, J. C. Wakefield.

— WE understand that the report ON NARCISSUS NOMENCLATURE embodying the conclusions of the Committee appointed at the Daffodi Conference will not be ready for the meeting of the Royal Horticultural Society on April 14th next at 3 P.M. in the Conservatory. It is proposed that a special display of Narcissus be made on that day, so as to enable the Committee to amend or to add to their report before its presentation. Several of the largest growers, Messrs. Barr & Son, Mr. Walker, and others, have already signified their intention of exhibiting largely. It is to be hoped that many amateur cultivators may also be induced to exhibit.

— AS an example of the increasing POPULARITY OF DAFFODILS, it may be noted that at the Chapel Royal, Savoy, recently, on the occasion

of the marriage of Mr. Alfred Benson with Miss Dalziel, the six bridesmaids all wore daffodil-yellow satin dresses, with large bunches of Daffodils on the right side of each dress, their veils being fastened with daffodil-yellow ostrich feather tips, and their bouquets were composed of Daffodils.

— GRANT FOR A FORESTRY SCHOOL.—The Lord Provost's committee of the Edinburgh town council has agreed to recommend the council to vote £250 towards the fund being organised by the Marquis of Lothian to establish a school of forestry in Edinburgh. The proposal is the outcome of the recent Forestry Exhibition.

— THE Prince of Wales, President of the INTERNATIONAL INVENTIONS EXHIBITION, has fixed Monday, May 4th, for the opening of the Exhibition. Rapid progress is being made in all branches connected with the Exhibition. The large space set apart for machinery in motion is already being filled, whilst preparations for receiving other exhibits are well forward, some of which have arrived at the building. The Aquarium Department is receiving considerable attention, and will form a very attractive feature. The tanks have been thoroughly cleansed and refilled with fresh water, which has been softened and filtered, rendering it bright and pure, fit for the reception of large consignments of fish that will shortly arrive.

— "W. S. A., Saltburn," sent the following note respecting GUM ON CAMELLIAS:—"I notice that the gummed Camellias are mentioned as having Tacsonias above them. Tacsonias, when growing luxuriantly and in a warm greenhouse, discharge many drops of nectar, as clear as water, and of a pleasant flavour. This dropping on the Camellia leaves may cause the gum as the nectar dries. The blackness may be caused either by some minute fungus or by dust."

— GARDENING APPOINTMENTS.—We are informed that Mr. Angus, who has for several years been in charge of the gardens at Warter Priory Pocklington, Yorkshire, the seat of C. W. Wilson, Esq., is now leaving and that Mr. George Duncan, recently foreman at Blythwood Gardens, Renfrew, N.B., has been appointed to succeed him. Under Mr. Angus's superintendence some extensive and important alterations and improvements have been satisfactorily carried out at Warter Priory, several very handsome houses being erected, particularly a spacious vinery. The general condition of the gardens has also been ably maintained. We also learn that Mr. Goldsmith, who for fifteen years has had charge of the gardens at Hollenden, Tunbridge, has left owing to the breaking up of the establishment, and is now awaiting another appointment. The following gardening appointments have been made through Messrs. John Laing & Co., Nurseries, Forest Hill, London, S.E.:—Mr. Biggs, lately at Park House, Southend, as head gardener to Mr. Black, Blackheath Park, Kent. Mr. Watts as head gardener to Sir Henry Fletcher, Bart, M.P., Ham Manor, Angmering, Sussex.

— THE MANCHESTER SPRING EXHIBITION was held last week in the Town Hall, and proved extremely successful in all respects. The exhibits were numerous and meritorious, the attendance of visitors being also large. Messrs. W. Cutbush & Son, Highgate and Barnet, had a group of Hyacinths, Azaleas, and Cyclamens. Mr. B. S. Williams, Upper Holloway, contributed a large collection of Cyclamens, Orchids, and Amaryllises. The Liverpool Horticultural Company sent a collection of Cinerarias; Messrs. Heath & Son, Cheltenham, and Messrs. Sander & Co., St. Albans, exhibited interesting collections of Orchids; Messrs. Dickson, Brown & Tait, G. & W. Yates, J. Hooley, and others showed collections of plants and flowers, adding greatly to the attractions of the Exhibition.

— REFERRING to the NEW ORLEANS EXHIBITION, *Vicks' Magazine* remarks, "At New Orleans, the past month, January, has been unprecedentedly cold and rainy, so that on two or three occasions the ground has been slightly frozen, and on one occasion at least a few flakes of snow were seen. During the past week, however, the weather has become mild, with some bright sunshine, and vegetation is beginning to respond to the change. A good many of the 230,000 Dutch bulbs planted on the grounds about Horticultural Hall are already in bloom, as are Pansies and Phlox, also Camellias, a shrub known here as Sweet Olive, and some of the earlier Magnolias; while many other shrubs are beginning to develop their blossom buds, and the Orange is giving indications of renewed growth, although in very many cases portions of the last year's crop still remain upon the trees."

— ACCORDING to M. Hausen-Blansted THE BEECH is supplanting other trees in the forests of Denmark. Its readiest conquests are made

in its struggle with the Birch, which is rapidly disappearing before it, and which now forms forests only where the soil is too poor to support the Beech. The earliest forests of the country were mainly composed of Aspens, with which the Birch was apparently associated; but as the soil and climate improved, the Fir appeared in great numbers and ruled for centuries. The first place was then gained by the Holm Oak, which is now, like the Birch and the Fir, but more slowly, being replaced by the Beech. The superiority of the Beech seems to lie in its power of growing in the shade of any trees, while other trees are unable to develop in the shadows of its own dense foliage.—(*Irish Farmers' Gazette*.)

— THE profit of FRUIT-GROWING, says the *American Cultivator*, depends very largely on the skill and enterprise shown in marketing. Fruit is a perishable product. If the middleman has to bear the wastage and shrinkage he will not pay the producer more than the bare cost of getting the crop to him. Farmers should be more independent of middlemen, and the more liable their product is to waste the nearer they should strive to get it to the consumer. Farmers who do this are little affected by hard times and low prices. The difference between the price of produce paid by the middleman, and by him charged to the consumer, is sufficient to afford a good margin of profit to the grower. In fact, as prices were last season, at the time the bulk of fruit had to be disposed of, selling it to the consumer direct was, in many cases, the only way to avoid positive loss. The farmer who has engaged in this business a number of years will have regular customers, and his route will become as valuable as that of a milkman near a city."

HEATING AND HOT-WATER PIPES.

BOTH gardeners and horticultural builders may profit by the sound practical remarks by Mr. Bardney on the above subject in your Journal of last week. Crowding a great number of pipes together is undoubtedly an evil to be avoided, but I think he draws a rather extreme instance, for few men would ever think of placing such plants as he names on an open lattice stage over such a large body of pipes. Such stages should always be covered with thin slates and spar, or ashes, placed on the top to retain a little moisture.

There is no doubt about the economy of having more rather than less piping than is necessary to heat a house. In a well-heated house when the pipes are once warm a banked-up fire will usually keep them all right during the day, as well as at night; but when a fire has to be always going there is no mistake about the fuel going too. Mr. Bardney's advice about chambers for mains is very good. These are often buried out of sight anyhow as if they never required to be looked to any more. I saw a very good, or as I should rather say a very bad, instance of this a few weeks ago. In visiting a friend we found great holes dug about the houses and yard, with heaps of soil, clay, and bricks beside them. On inquiry we were told that the iron filings were splitting all the joints in the mains, and even in some instances inside the houses. On looking into some of those holes we could see that the chamber was just wide enough for the pipes and no more, and when a leak was found—and the job is to find it in some such cases—nothing can be done till the bricks on each side are pulled out. I can scarcely say why the joints should split, but my friend was of opinion that there must have been some mistake in mixing the filings, and that they had put too much in—the socket being right full from end to end. I do not know for certain, but judging by the age of the Vines, &c., these pipes will have been fitted about ten years.

It must be admitted that the small tap usually fitted into boilers are useless as sludge pipes, and, as your correspondent says, an opening nearly as large as the pipes themselves should be provided. It might be done very simply in this fashion. Instead of the usual elbow passing through the brick-work into the boiler, fix a T piece in the position shown in the accompanying sketch (fig. 46), and in the lower end of the T at a fix a short diminishing pipe, the end of which could be stopped with a plug or cap that would unscrew when wanted. This would add but little to the cost, and would certainly answer the purpose of a sludge pipe, which cannot be said of the taps intended for that.—A WORKING GARDENER.

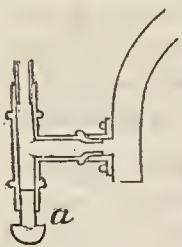


Fig. 46.

LIKE Mr. Bardney (see p. 226) I, too, was under the impression until recently that all valves were useless, or nearly so, for holding back the water during a break-down in the apparatus. Unfortunately we have had two breakages lately, both near to a junction, between the main pipes and a branch; but on screwing down all the valves in the other houses we were able to keep every drop of water in the pipes, except of course what was beyond the fracture. Thus we were enabled to refill in a few minutes after the repairs were completed, which is a great advantage in a case like ours, where several large houses are heated from one boiler. Some of our valves have been in six years, the others three years. It is perhaps only fair to add they were put in by Messrs. Rendle.

For packing the joints I like spun yarn, finished with a good thickness of red lead putty. I know where there are pipes put up in this way

eighteen years since, the joints of which are all as sound now as ever; and if required they could be unpacked much quicker and more safely than those made with iron filings. The latter if not very carefully made are liable to swell too much and burst the socket, and it is almost impossible to take them to pieces without cracking the pipes. I have not seen red lead tried for main pipes, where of course the pressure is often much greater than in the instance I have quoted. But I have been told by several people joints are most easily made or taken apart with india-rubber rings, and that they are also very reliable. Hitherto, however, I have had no chance to try them.—W. H. DIVERS, *Ketton Hall*.

SNOWDROPS.

"M. S." appears to be rather "mixed" in his estimation of what are varieties and species in his interesting remarks upon these charming flowers in the Journal (page 227). Some of the names "M. S." mentions are new to me, but as he describes them as some of the "principal forms," I take it he means forms of *G. nivalis*. What is *G. æstivalis*? Mention is made of *G. latifolius*; does "M. S." mean the one usually grown under the name of *Redoutei*? If so, I think it deserves specific rank. Besides the varieties mentioned by "M. S.," I may remark upon some others which are known to me—viz., *G. cocyrensis*, which is the earliest of all to flower; leaves broader than in the type; flowers rather longer; blotches very pale green. *G. lutescens*, flowers very delicate-looking, with a distinct yellowish tinge at the base of the inner segments. *G. virescens*, very late flowering and distinctly striated or flaked, with bright green; a veritable gem and extremely scarce. I have one now in flower, or it is just fading; the inner divisions are scarcely notched, and the green blotches are quite obsolete, but the inside of these divisions are striped with pale green; it is a frail-looking little plant, with rather broad very glaucous leaves. The late Mr. Harper Crewe made a speciality of these modest early flowers, and well they deserved it, and I hope some of our enthusiastic bulbophiles will do likewise; a marvellous amount of interest centres in them.

I regard the following as species:—*G. Elwesii*, *G. plicatus*, *G. Redoutei*, and *G. nivalis*. Of the last there are many forms, the following being the only ones known to myself, viz.:—*Imperati* (the Italian variety), *cocyrensis*, *lutescens*, *virescens*, *Melvillei*, *Sharlockii*, and the spotless form mentioned above. I think the variety *Imperati* is the finest of all Snowdrops when thoroughly happy; there is such a substance and purity in its long cylindrical buds, and the flowers when expanded are very large. *G. Elwesii* is variable; in its true character it is very distinct, but we are frequently disappointed with it, some of the flowers being but poor mimics of the narrow forms of *G. nivalis*, but invariably with the green basal blotches. A happy trio in nature seems to be *G. Elwesii*, *Scilla bifolia*, and *Chionodoxa Lucilæ*. An imported batch are now flowering, and very pretty they are thus associated.—T.

BRISTOL SPRING SHOW.

MARCH 18TH AND 19TH.

ALTHOUGH in some respects scarcely so good as usual, the fifteenth Exhibition of bulbs and spring flowers generally, held under the auspices of the Bristol Chrysanthemum and Spring Show Society, may still be rightly considered a great success. The Victoria Rooms, Clifton, where these exhibitions are always held, are particularly well adapted to the purpose, and the Committee of practical gardeners, with the new and most energetic Secretary, Mr. Polkinhorn, at their head, succeeded in arranging a very attractive and generally excellent display. In the course of the meeting a presentation was made to Mr. G. Webley, who from the commencement of the Society up to last year, or for about sixteen years, has so ably filled the important post of Honorary Secretary. It consisted of a solid silver biscuit basket, set of silver spoons, and a very handsome album; and another valuable present was subscribed for by various well-wishing friends who attended the meeting. The presentation was made by Mr. J. Garaway, and on the behalf of the Society expressed their gratitude for the valuable service so long willingly given to the Society by Mr. Webley, and which was suitably acknowledged by that gentleman. Few, probably, are aware of the amount of labour and tact required of a secretary, and we who have been "behind the scenes" have much pleasure in recording such a substantial recognition of Mr. Webley's services.

Hyacinths.—There was a considerable falling off in the number of Hyacinths and other bulbs exhibited, and on the whole those staged were somewhat below the average as far as the size of spikes and pips were concerned, but the colours were unusually bright and good. In the premier class, or that provided for eighteen Hyacinths and twelve pots of Tulips, there were only three competitors, Mr. Marsh, gardener to M. Dunlop, Esq., being a good first. His collection consisted of very creditable examples of Hyacinths Grand Maître, Lord Shaftesbury, Haydn, Queen of the Blues, Paix de l'Europe, Queen of Hyacinths, Obelisque, General Havelock, Von Schiller, Mont Blanc, King of the Blues, De Candolle, Lord Maucanlay, Pieneman, l'Innocence, Fabiola, Général Pellisier, and Lothair; while the Tulips—which, like the Hyacinths, were very fresh, sturdy, and even—consisted of *Imperator rubra*, *Tournesol*, *Joost Van Vondel*, *Vermillon Brilliant*, *Murillo*, *Proserpine*, *Keizer Kroon*, *Yellow Tournesol*, and *Fabiola*. Mr. W. H. Lintern, gardener to W. Butter, Esq., was awarded the second prize for a collection in which only a few Hyacinths were a little inferior; the third prize going to Mr. C. Taggett for another praiseworthy collection. There were six exhibitors of twelve Hyacinths, distinct, and with these Mr. J. Gastrell, gardener to W. A. Jones, Esq., was successful, having among others excellent spikes of *La Grandesse*, *Grandeur à Merveille*, *Queen of Hyacinths*, *Baron Von Tuyl*, *Lord Macaulay*, *Blondin*, *Marie*, and *Ida*. Mr. W. H. Lintern was a close second, and Mr. W. Fox, gardener to Mrs. Hurle, was a good third. The best six Hyacinths, these consisting of good

examples of *Ida*, *Princess Mary of Cambridge*, *Grandeur à Merveille*, *Pieneman*, *Von Schiller*, and *l'Innocence*, were staged by Mr. Gastrell; the second prize going to Mr. W. Fox. Mr. Ashley Hill, gardener to W. Dobson, Esq., staged the best six pairs of *Hyacinths*, these consisting of creditable examples of *Czar Peter*, *Grandeur à Merveille*, *Général Pellissier*, *Mary Erskine*, *l'Innocence*, and *Fabiola*; and Mr. W. Fox was a close second. With twelve *Hyacinths* in four colours Mr. J. Webley took the lead with one of the best collections in the Show. The varieties were *Gigantea*, *Princess Helman*, *Lord Derby*, *Princess Mary of Cambridge*, *La Grandesse*, *Princess Charlotte*, *l'Innocence*, *Linnaeus*, *Madame Van der Hoop*, *Von Schiller*, and *Howard*. Mr. W. Fox was a close second, Mr. A. Hill third, and others showed very creditably in this well-filled class. In another special class for twelve distinct varieties Mr. G. Marsh was first and Mr. Fox second, the exhibits in this class being generally good. With twelve *Hyacinths* in not less than six varieties Mr. A. Hill was first; Mr. F. Perry, gardener to H. C. Miles, Esq., second; and Mr. W. H. Lintern third, all having fairly good examples of popular sorts.

Tulips.—The competition with these was close, and the various exhibits included very few inferior blooms. With four pots of three bulbs, single varieties, Mr. W. Fox was first, having very even well-coloured examples of *Proserpine*, *Golden Princess*, *White Pottebakker*, and *Keizer Kroon*. Messrs. W. H. Lintern and C. Taggett were respectively second and third with similar varieties. In the corresponding class for doubles Mr. Fox was again first with *Tournesol*, *Rex Rubrorum*, *Murillo*, and *Yellow Tournesol* in good condition. Messrs. Lintern and Taggett were again second and third. *Vermillon Brillant* was largely shown, and the various exhibits of four pots were not easily separated. Mr. W. H. Lintern was first (prize, a bronze medal of the Royal Horticultural Society); Mr. Fox second, and Mr. Marsh third, while the prizewinners with *Crocuses* were Messrs. A. Hill, W. Fox, and W. H. Lintern, who secured the awards in the order named.

Fine-foliaged Plants.—There were scarcely so many of these as usual, but among those staged were several very fine specimens. With six plants Mr. W. Rye, gardener to J. Derham, Esq., was easily first, having grand specimens. Mr. R. Morse, gardener to S. Budgett, Esq., was awarded the second prize for very creditable specimens, and Mr. F. Edwards, gardener to J. Lysaght, Esq., third. Mr. Rye was also first for four plants, staging large healthy specimens of *Croton variegatus*, *C. undulatus*, *Cycas revoluta*, and *Dæmonorops palembanicus*. Mr. Morse was again a good second. The best six Ferns were staged by Mr. W. Bannister, gardener to H. St. Vincent Ames, Esq., these consisting of large healthy examples of *Gymnogramma chrysophylla Laucheana*, *Gymnogramma seedling*, *Microlepia hirta cristata*, *Adiantum trapeziforme*, *A. farleyense*, and a *Nephrolepis*. Mr. W. Rye was a good second. A very pretty lot of Ferns suitable for table decoration were shown, Mr. J. Loosemore, gardener to W. Cooper, Esq., being first with neat pairs of *Adiantum cuneatum*, *A. farleyense*, and *A. gracillimum*. Mr. E. Miller, gardener to F. Taggart, Esq., was second, and G. W. Shelton, gardener to W. K. Wait, Esq., third. A large number of table plants in 6-inch pots were staged, the first prize going to Mr. R. Morse for very pretty pairs of *Pandanus Veitchii*, *Dracaena nigro-rubra*, and *Croton Johannis*. Mr. E. Miller was a close second, and Mr. Bannister third.

Flowering Plants.—A few very good Orchids were exhibited, the first prize, this being the silver medal of the Royal Horticultural Society, for a single specimen going to Mr. E. Miller, who had a well-flowered plant of *Phalaenopsis Schilleriana*. Mr. F. Terry was second with a fine pan of *Cælogyne cristata*, and Mr. F. Nichol, gardener to Mrs. Miller, third for a good basket of the same Orchid. Azaleas were also well represented, several of the specimens being well flowered, though they were too neatly trained. The best four plants were shown by Mr. A. Hancock, gardener to A. H. Summers, Esq. Messrs. Maule & Son were first with six forced hardy hardwooded flowering plants, these consisting of white Broom and several Belgian Azaleas all profusely flowered. The same firm were also first with four *Rhododendrons* in pots, these being finely flowered standards in good variety. Primulas were well shown by Messrs. W. Bannister, J. Marshall, and W. Rye; Violets in pots by Mr. E. S. Cole, gardener to W. Pethick, Esq., and Mr. E. Miller; *Cyclamens* by Messrs. F. Edwards, G. Webley, and S. Blacker, gardener to Miss Charles; Lilies of the Valley by Messrs. G. W. Shelton and F. Perry; and *Cinerarias* by Messrs. F. Perry, J. Marshall, and W. Bannister, who received the prizes in the respective classes in the order named, the exhibits in each instance being praiseworthy.

Groups of Plants.—These are invariably a grand feature at the spring shows of this Society, and on this occasion there was no falling-off either in numbers or quality. They were arranged against a high wall, occupying a space 12 feet by 7 feet, and as flowering plants are almost exclusively employed the display is naturally most brilliant and attractive. The first prize, a silver cup, was awarded to Mr. F. Perry for a rather formal arrangement in which Orchids and hardwooded plants played an important part. Among the former were well-flowered examples of *Cypripedium villosum*, *C. Haynaldianum*, *C. Boxalli*, a good form of *Vanda tricolor*, and *Lycaste Skinnerii*. Mr. Rye was a very close second, the arrangement in this case being rather less formal, and the quality of the plants only slightly inferior to those in the premier prize group. Messrs. Maule & Son were placed third for a lighter and rather too thin arrangement, in which small pieces of choice Orchids figured prominently if not exactly picturesquely.

Cut Flowers.—Several good stands of cut Roses were brought, but Mr. W. Taylor, gardener to Alderman Chaffin, Bath, was easily first with fresh and good examples of *Teas Devonensis*, *Anna Ollivier*, *Souvenir de Madame Pernet*, *Alba rosea*, *Madame C. Kuster*, *Madame Falcot*, and *Maréchal Niel*. Mr. S. Blacker was a good second, his best blooms being of *Cheshunt Hybrid*, *Gloire de Dijon*, and *Maréchal Niel*. Vases of cut flowers were of their usual excellence, the flowers being choice and tastefully arranged, and the same may be said of the hand bouquets. The principal prizewinners were Messrs. E. S. Cole, M. Hoskings, and E. T. Hill.

Fruit.—Two good lots of Grapes were shown, Mr. Nichol securing the first prize with remarkably well kept *Lady Downe's*. Several good dishes of Apples were in competition, Mr. E. T. Hill being first with *Blenheim Pippin* in excellent condition, Mr. Bannister second with a very good dish of *Cox's Orange Pippin*, and Mr. J. Marshall.

Non-Competitive.—One of the greatest attractions of the Show was the remarkably fine *Narcissus* blooms sent in by J. Dorrieu Smith, Esq., the lord proprietor of the Scilly Isles. This gentleman has collected a wonderful variety of *Narcissus*, and in time the Scilly Isles will be in a position to stock our markets both with early blooms and bulbs of the best description. The blooms sent were arranged according to Baker's classification, and comprised some of the very best sorts in each section. Some of the most attractive were *Ajax bicolor* James Walker, *bicolor Emperor*, *bicolor Horsfieldii*, *obvallaris*, *princeps*, *rugilobus*, *Telamonius flore-pleno*, *Incomparabilis flore pleno*, *Orange Phoenix*, *concolor* Frank Miles, *Leedsii C. J. Backhouse*; *pallidus aurantius*, *Leedsii amabilis*, *Leedsii Gem*, *Giganteus*, *Odorus*, *Polyanthus Bazelman Major*, *Jaune Supreme*, *Grand Soliel d'Or*, *compressus*; *Poeticus ornatus*, *Burbidgei*, and *J. M. Absolon*. Altogether about one hundred sorts were shown, and as there were good-sized bunches of some of them the long array of stands made up a display unique as far as Bristol is concerned, and which certainly deserved the award made to it of a silver medal. Another noteworthy display consisted of 200 well-grown *Hyacinths* exhibited by Messrs. Jas. Garaway & Co., Clifton. They were staged in good style, and many of the spikes were above average merit. A few of the best represented sorts were *Obelisque*, *Nimrod*, *Lord Derby*, *The Sultan*, *Louis Philippe*, *Lord Derby*, *Marchioness of Lorne*, *Linnaeus*, *Susanna Maria*, *Grand Maître*, *Fabiola*, *Marchioness of Lorne*, *La Joyeuse*, *Plimsoll*, *Blondin*, *General Havelock*, and *l'Incomparable*. Messrs. Parker & Sons contributed several bouquets composed of choice flowers and vases suitable for dinner-table decoration.

PRUNING AND MANURING ROSES.

THE season of planting is over, and pruning now demands attention. Recently planted bushes may be pruned at once. They will not be very rapid in commencing growth, and it is best when they do begin that the wood formed should be permanent. We usually shorten the branches to within four or five eyes from the bottom of each. Plants put in last year or in former seasons should be pruned according to their habit. Shy-growing varieties should never be hard pruned, as there is a possibility of crippling them; but robust growers are benefited by a rather severe pruning. Early pruning is a great mistake, as it induces the lower buds to start into growth prematurely, and they frequently suffer for it in being overtaken by frost. Plants which have formed a number of small growths and a few very strong long ones should have the small ones closely cut in, and the strong shoots relied on for a supply of bloom. About 6 inches of growth at most is sufficient. What we have noted might be described as the short-spur system of pruning, but it is not the only mode of dealing successfully with Roses.

When dwarf bushes form growths in autumn from 5 feet to 8 feet in length it seems a pity to cut them all off at pruning-time in spring, and where there are many plants grown we would strongly advise that a number of these growths be left uncut, and peg them down. They will not if very strong bend down to touch the ground, as some may think of trying to root them; but this is not the object, the principle being to bend them over and peg them about 1 foot or so from the ground, allowing them to remain full length, and every bud along the stem will soon send up a shoot, and these pegged down stems will bloom very profusely. For profuse blooming no plan will equal this, and it is rather surprising that pegging is not oftener practised. Anyone wishing to possess a mass of Roses, growing and blossoming in semi-wild profusion, could not do better than peg down the shoots over some beds. To secure very early Rose blooms there is no better plan than not to prune. In many cases now the shoots on unpruned branches of last year will be a few inches in length, especially near the top; but if those shoots were cut back in pruning all the early growths would be gone, and it would be some time before the lower buds would be so far advanced in growth. For this reason we always allow a few of our earliest bushes to remain unpruned, and they supply us with blooms some weeks in advance of the pruned ones; but as a matter of course the very early ones are not so fine as the late ones, and would never do for exhibition. The pegged-down shoots generally bloom earlier than those cut back, and for that reason this mode of culture is not recommended where exhibition blooms are required.

Plants growing in well-prepared quarters do not require the roots disturbed annually by digging in large quantities of manure amongst them, but judiciously applied top-dressings are of the utmost advantage. Beeson's bone manure is applied by taking a little of the surface soil from around the stem and shaking a handful or two over the roots, and then return the soil. The finest Rose growths and blooms we ever produced were secured in this way. Many think their Roses will degenerate if the whole of the surface near them is not deeply forked or dug, and much natural manure added every spring, but nothing is gained by disturbing the roots very much. Roses properly planted by the beginning of March, rightly pruned now, and top-dressed are sure to give their owners satisfaction from the beginning to the end of the flowering season; and after cultivation will be conducted with little or no expense.

These remarks apply to an extensive collection of Hybrid Perpetuals grown exclusively to supply a large number of blooms, but the treatment of Tea and creeping Roses against walls, and grown in various ways both in the open and under glass does not differ much from the above as regards soil and top-dressings. Pruning is done at about the same time, but not so extensively, as our Tea Roses are never hard cut-in, thinning out the small useless shoots to give more space to the strong ones being the main object in pruning. Very strong shoots formed last year and thoroughly ripened in the autumn will produce much finer blooms than small or intermediate growths, although these generally produce the greatest number of buds. The first blooms of the season on Tea Roses

are not as a rule so fine as those which follow, and these will have the full benefit of any top-dressings given to the plants now.—M.

THE BOUVARDIA.

WHERE cut flowers are much in demand the Bouvardia should be extensively grown, as it can be had in bloom for the greater part of the year; but it is in the winter when it will be most appreciated. It is a native of Mexico, and therefore does not require a high temperature; but in order to flower it early a brisk heat must be maintained, in which the fragrant blooms will open in succession for a long time.

Bouvardias are comparatively easy to grow, yet we do not find them grown in private gardens as we ought to do. Where plants have been placed in heat through the winter plenty of cuttings will be produced by this time; these should now be taken, inserted in small pots, and placed in a propagating pit, or, failing this, under bellglasses. The pots may be plunged to their rims in bottom heat, a hotbed made up for Cucumbers or Melons will be suitable for them, where they will soon root, when they can be taken out of the plunging material, and more air admitted in favourable weather, being careful to shade from the sun. In a few days they will be ready for placing singly in small 60-size pots.

The best soil is loam, leaf soil, and sand, and when potted the plants should be returned into heat until the roots have taken to the new soil, after this they can be more fully exposed to sun and air; but they must be kept growing in a warm moist house until the end of July, when they can be placed in a cold frame. Although bushy in habit some shoots will be sure to take the lead, and these must be pinched back. About the end of September place the plants in a house where a little heat can be turned on when required. If wanted in bloom early a temperature of 60° may be maintained, if more heat is given the flowers will not last long when cut.—A. ANDERSON, *Lea Wood, Cromford.*

YOUNG GARDENERS.

IT has always seemed to me that many of the hints to young men could be just as well written by young men themselves. As a general rule no kind of books are more futile than those of "Advice to young men entering life." We seem to enter life nowadays so much earlier. The Winchester scholarship papers for boys under fourteen are very nearly as difficult as those for the ordinary pass degree at Oxford or Cambridge.

I have not had the pleasure of seeing any communication on this head other than "H.'s" on page 235. If a young boy, for most apprentices begin when leaving school, is impudent, in nine cases out of ten it is because the moral influence of the chief is feeble, and because he lets all his littlenesses and lack of independence and stability of character be observed. The necessity of doing things thoroughly, if not natural to a young fellow, can only be drilled in by the sharpest surveillance. To sigh and say that it used not to be so in bygone days is a very near approach to nonsense. Young men are to spend their time "economically." The phrase sounds well, and it is no doubt good, that a certain amount of time, especially in the winter, be given to a fixed idea of acquiring a good knowledge of some useful science or form of culture. But that cricket or manly exercises ought to be neglected for them is very questionable. What are the profitless amusements? Is the reading of fiction one? I know dozens of gardeners who would say so, but I know hundreds who would be far richer in the graces of demeanour, manner, and appearance, and more catholic in their sentiments, by having read books like Besant and Rice's, Black's, Miss Thackeray's, and those of our pomological friend Mr. R. D. Blackmore. This is only to take contemporary novelists. Can a man who has been in a hothouse all a summer's day, or monotonously giving the *coup de grâce* to insects galore, be expected to dive deep in the evening into solid works? Rather let him play his game or take his walk, but put in his way the books of these novelists and he will soon awake to the problems of life and see that success means hard and high endeavour.

It is common sense that the best way to improve character and manners is to take those of the men we admire as examples. Novels, if they are to be worth anything as moral and practical teachers, and few will doubt that they can be made so, must contain some noble type of character and some descriptions that will widen views. Young men living in lodgings, very often far from home or friends and with few chances of seeing men or things outside their garden walls, whence can they get types of character and knowledge of the laws of courtesy? And then, again, though perhaps you will not insert the sentence, there is the hurry to get married so noticeable in young men of the middle classes. There are few things like marriage and children to knock originality out of a man who has a small income. His mental growth is kept back by the fear of not being able to make both ends meet.—C. A. M. C.

THE OLD DOUBLE WHITE PRIMULA.

THE present is a good time to strike cuttings of this lovely and much appreciated old plant. If the plants have been kept in a good temperature throughout the winter months, many of the side growths will now have air roots protruding from under the base of the leaves. These shoots should now be taken off and either placed into thumb pots, one in each, using a compost of half sand to half soil, or preferably inserting them for a

couple of weeks or more among the growing sphagnum in which Vandas and other Orchids are growing. Every little bit is sure to grow in this. Shoots without roots may be left a little later, when they will root with greater certainty than they would at present. I have rooted them well in April inserted with cuttings of other plants among the sand in a propagating pit. The one danger to avoid with these is damping, and the best antidote is a high temperature, plenty of moisture, and a thoroughly open material to root them in. When rootlets have been produced the young plants are transferred into pots 2½ inches in diameter, the soil we employ being loam, dry cowdung, and coarse sand in equal parts. If a temperature of 55° is afforded the young plants it will be sufficiently warm to induce a steady and robust growth. They should be shaded from sunshine all summer. During the summer months the plants succeed very well in cold frames if they are sufficiently shaded.

In May place the plants into 4-inch pots, and in July another shift into 6-inch pots will be necessary. Good drainage is in all cases very essential, and we like to press the soil in very firmly. From the beginning of September the plants are provided with surfacings of manure, which are continued throughout the flowering period until the following spring. In the end of September the plants are removed to a structure where a temperature of 50° to 55° is given them all the winter through. They must never be allowed to become dry at the roots, as these are so fine and so easily killed, that dryness is more injurious to them than to most plants.

Our stock is grown solely for supplying cut flowers, and as we are obliged to cut the trusses, we find the above conditions as to temperature, &c., well fitted to keep up a continued supply of fresh trusses to take the place of those cut. Those who merely want the plants to look at may find that a slightly lower temperature would suit their purpose better, and yield them a small supply of finer flowers, which will last longer fresh on the plants than under the condition we find it well to follow. It may be added that under the above cultural conditions this plant gives no trouble whatever.—B.

CULTURE OF LYCASTE SKINNERI.

IN the *Journal of Horticulture* for March 19th, 1885, a woodcut illustration was given of the plant of *Lycaste Skinneri* exhibited by me before the Floral Committee of the Royal Horticultural Society on March 10th. It was also suggested that a few remarks as to the culture adopted would be acceptable to the readers of the *Journal*, and these I now furnish.

My worthy employer, S. Taylor-Whitehead, Esq., is a great admirer of this beautiful old Orchid. The plant from which the woodcut was taken is a portion of one purchased a few years since from Messrs. James Veitch & Sons of Chelsea, and is, as you say, a very beautiful variety. I exhibited it before the Floral Committee on March 28th, 1882, and was awarded a cultural commendation. The plant then had two growths, bearing twelve flowers. After this we considered it advisable to divide it, which was accordingly done. We have now two plants, the one exhibited at Kensington and another bearing eight fine flowers.

Some cultivators recommend a cool temperature for this beautiful *Lycaste*, here we find it succeeds best in a much warmer one. We grow our plants in a mixture of good fibrous peat and small pieces of broken potsherds, with a liberal addition of sharp silver sand and abundant drainage. During the growing season water is given freely, and weak guano water occasionally until the bulbs have matured their growth. A moist genial temperature is maintained, and fresh air admitted on all favourable occasions. The plants are shaded only during bright sunshine. After the growth is completed the plants are kept moderately dry till the flower shoots show well above the soil, guano water is again applied as before stated, copious waterings being given as the flowers advance in growth.

Before closing these few remarks I wish to give a just word of praise to Mr. A. Bushnell, my plant foreman here, for the creditable manner in which he carries out the work under his charge.—WATER G. GAIGER
Burton Closes Gardens, Bakewell.

CELSIA ARCTURUS.

LAST week we noted a specimen of this interesting and beautiful plant which was sent us by Mr. Axford, and as it might be advantageously grown in many gardens we had a drawing prepared that shows (fig. 47) the principal features of the species.

Under various names, such as *Arcturus creticus*, *Verbascum Arcturus*, and others, this plant has been known for many years; but it does not seem to have been grown in England until late in the eighteenth century. Writing in reference to it in 1818 Dr. Sims observed: "The first notice we have of this plant occurs in a letter of Honorius Bellus, a physician of Cydonia, in the Island of Candia, to Clusius, published in the second volume of his '*Historia Plantarum*.'" It was again described and figured by Prosper Alpinus as a native of the same island, and afterwards by Fabius Columna." It was brought prominently into notice about the same time by Messrs. Chandler & Buckinham of Vauxhall, who, it is

said, stated that "It came up with three different parcels of seeds from New South Wales"—a curious accident.

Celsia Arcturus is a half-hardy biennial, and can be either grown out

of doors during the summer or in a conservatory, the latter method being a very suitable one, as the flowers are then produced early in spring at a time when any addition to the floral display is most welcome. The



FIG. 47.—CELSIA ARCTURUS.

flowers are bright clear yellow, the filaments of the four stamens being covered with dark purple glandular hairs. The plant is of free growth, and produces its long branching spikes in abundance.

Mr. Axford has favoured us with the following remarks upon his method of cultivation:—

"My mode of propagating the plant is by cuttings, the young growths

striking freely. I usually insert three or four cuttings in a 60-pot place it under a handlight in a vinery, and keep the glass close for a few days. When well rooted I place some of the young plants singly in small pots, and shift them as necessary, stopping once to make them produce more growths and become bushy in habit. These tops are inserted as cuttings; others are placed three in a pot and grown on without stopping, each plant producing a good spike. An ordinary greenhouse temperature suits them well, and the best compost is good loam, with leaf soil, a little well decayed manure, and a dash of sand. The spike I forwarded to the Journal was cut from a plant in a 32-sized pot; it has another spike on it similar to the one sent and two others, but much smaller. I usually grow them in that size of pot, as it is convenient for decorative purposes; but of course larger ones may be employed if a large specimen is required. Due attention must be paid to watering and the plants not allowed to flag, or poor spikes will result; but by a generous treatment it will amply repay for the care bestowed on its culture. Having only a limited quantity of glass I can only grow a few plants, but those having more convenience may, with successive batches, have them in flower nearly all the year. I hope that bringing the above plant before the readers of our valuable Journal will render it more extensively grown, for I think at present very few grow it, and those who have not seen it have no idea of its beauty and usefulness."

ROYAL HORTICULTURAL SOCIETY.

MARCH 24TH.

THOUGH more extensive shows of bulbs have been seen at Kensington that of Tuesday last was very satisfactory, the contributions from the leading metropolitan nurserymen forming a beautiful display. The two long stages were filled with groups of Hyacinths, Tulips, Cyclamens, Daffodils, and miscellaneous plants, which furnished a brilliant and varied array of colours, while numerous rare or new plants added greatly to the interest of the meeting. Both Committees were well attended, and during the afternoon many visitors assembled to admire the flowers and enjoy the selection of music performed by the Royal Horse Guards' band.

FRUIT COMMITTEE.—Present, F. D. Godman, Esq., in the chair; Dr. Robert Hogg, and Messrs. John Lee, Arthur W. Sutton, Harry J. Veitch, John Burnett, George Bunyard, John E. Lane, G. Paul, T. Francis Rivers, J. Roberts, F. Rutland, R. D. Blackmore, John Woodbridge, Harrison Weir, T. B. Haywood, G. Goldsmith, and J. Willard.

Dr. Bull of Hereford sent a dish of Herefordshire Beefing, which at this late season was in fine condition. The flesh is unusually sharp and acid, and very valuable as a cooking Apple at this season. Mr. Sidney Ford, The Gardens, Leonard's Lee, Horsham, sent Mincing Pippin, a local Apple, of good size, striped, and when cooked is remarkably good. He also sent an Apple called Bossom, and Minchall Crab. Mr. Charles Ross, The Gardens, Welford Park, Newbury, sent fruit of Peck's Pleasant. An Apple exhibited by Mr. Isaac Harrison of Leicester, shown on November 11th, and which was recommended to be shown again in March, was again brought forward. It was in good condition, but not of sufficient merit to receive an award.

FLORAL COMMITTEE.—Present—G. F. Wilson, Esq., in the chair; Dr. Maxwell T. Masters, Rev. G. Heuslow, and Messrs. W. Wilks, H. Bennett, J. Walker, James Smith, H. Herbst, J. James, Shirley Hibberd, John Fraser, Charles Noble, G. Duffield, H. Ballantine, H. M. Pollett, John Dominy, H. Williams, James O'Brien, Thos. Baines, H. Cannell, W. B. Kellock, Harry Turner, and Amos Perry.

A remarkably well-grown specimen of the fragrant and pretty *Trichopilia suavis* was shown by W. Soper, Esq., 307, Clapham Road, S.W. (gardener, Mr. Dains), for which a cultural commendation was awarded. The plant was in a 10-inch pot, and had about fifty flowers clustering round the base of the growths, the sepals and petals white, the lip large, white spotted with bright purple. This is a favourite Orchid with most people, but when in such condition as this it is especially charming. Messrs. H. Cannell & Sons, Swanley, had some fine examples of the large-flowered Primrose Harbinger, for which a vote of thanks was accorded. Mr. H. Bennett, Shepperton, sent blooms of some of his "Pedigree" Hybrid Tea Roses, for two new varieties of which, "Ye Primrose Dame" and "General Gordon," first-class certificates were awarded. Thirty blooms of the handsome Lady Mary Fitzwilliam were shown, the majority being of fine form and substance, clear pale pink in colour, and very fragrant. Blooms of the celebrated Rose, William Francis Bennett, which has created such a sensation in America, were also sent and were much admired. The colour is a deep rosy crimson, and the blooms are very neat, especially in the bud. H. M. Pollett, Esq., Fernside, Bickley, was awarded a cultural commendation for an uncommonly good specimen of *Odontoglossum Wilckeanum*, which had three large panicles, bearing a total of fifty-one flowers and buds, several of the latter not being fully developed. The variety was a good one, the flowers neat in form, yellow with bold dark brown blotches. J. Batten, Esq., Highfield, Bickley, exhibited a plant of *Odontoglossum gloriosum majus*, the flowers large, yellow spotted with reddish brown. Mr. R. Newburgh, Manor House, Feltham, exhibited flowers of the showy *Camellia Mathotiana* of great size, and of the peculiarly rich crimson tint distinguishing this variety. Messrs. W. Thomson & Son, Clovenfords, showed some fine flowers of *Cattleya Trianae* and C. Mendeli, the lips being richly coloured. Mr. J. Walker, Thame, Oxon, contributed a box of blooms of the pure white and floriferous *Clematis indivisa lobata*, for which a vote of thanks was accorded, a similar recognition being adjudged for each of the preceding; and to C. S. Dickens, Esq., Coolhurst, Horsham, for a collection of reputed species of *Polyanthus Narcissi*, amongst which were *N. Ganymedioides* with small creamy flowers, the white *N. papyraceus*, the golden *N. aureus*, *N. floribundus*, *N. mediterraneus*, and *N. chrysanthus*, all very pretty.

GROUPS OF BULBS AND OTHER PLANTS.

Hyacinths were well shown by three firms, but though 370 plants were staged this total was much less than at similar shows in some preceding years. The spikes, too, were generally smaller than has been usual, though

there was a good proportion of massive and handsome examples, and the colours were extremely bright, rich, and varied. Tulips were bright and beautiful, of moderate size, but very clean. Silver-gilt Banksian medals were awarded to each of the three following exhibitors for their very handsome groups:—Mr. B. S. Williams, Upper Holloway, had the most extensive collections of Hyacinths, Tulips, Cyclamens, &c., effectively arranged. Of Hyacinths 150 were staged, and in this group many of the spikes were all that could be desired, dense, massive, and noble in appearance, with large bells most delicately or richly coloured. All the best varieties were represented, but the most notable single forms either for colour or size of spike were the following:—Red: Lord Macaulay, Van Speyk, Challenger, Prince of Orange, Garibaldi, Von Schiller, General Pellissier, Jenny Lind, Prince Albert Victor, Distinction, Roi des Belges, and Vuurbaak. Dark blue: Sultan, Marie, Duke of Connaught, Feruck Khan, Masterpiece, and King of the Blues. Light blue: Grand Maître, Czar Peter, and Lord Derby. Yellow: Ida, and Obelisque. White: La Grandesse, Mont Blanc, La Neige, and Madame Van der Hoop. The doubles were not numerous, and the only two of special note were Van Speyk, double mauve, and Garrick, dark blue. Fifty pots of Tulips were shown, each with three bulbs in a pot, the flowers being especially bright. The single varieties were very beautiful, including the following:—Ophir d'Or, bright yellow; White Pottebakker; Fabiola, rose and white; Keisers Kroon, red and yellow; Vermilion Brilliant, fine rich scarlet; Rose Luisante, rose and white; Joost Van Vondel, crimson and white; and Van der Neer, purple. The best of the doubles were Velvet Gem, dark red and yellow; and Leonardi da Vinci, red and yellow. Eighteen pots of *Polyanthus Narcissi* were also arranged in the group, the plants flowering very freely and representing the following varieties:—Her Majesty, yellow cup and white petals; Bazelman major, similar; Soleil d'Or, orange cup, yellow petals; and Gloriosus, orange cup, white petals. Six large pots of Lilies of the Valley with hundreds of spikes, about eighty well-grown Cyclamens of an improved strain, several large Primulas, *Azalea mollis* varieties, a few *Amaryllises* and miscellaneous plants completed this large and imposing group.

Messrs. J. Cutbush & Son, Highgate and Barnet, staged a similarly extensive and beautiful group, comprising 150 Hyacinths representing the same varieties as those already enumerated. Many of the spikes were of considerable size, and the colours were particularly bright. Sixty pots of Tulips were shown, comprising a fine selection of varieties, and several large specimens of *Viburnum Tinus lucidum* were included. The latter is a beautiful variety with large pure white flowers in heads 4 to 5 inches in diameter, the plants being compact and free. This was an interesting and attractive group, all the plants being well grown and tastefully arranged.

Messrs. J. Veitch & Sons, Chelsea, contributed a small but choice collection of Hyacinths and Tulips, several new varieties being represented amongst the most distinct and meritorious of older forms. The Hyacinths were even in size, with fine compact spikes and large highly coloured bells, the Tulips being correspondingly showy. Of the new Hyacinths the following, all singles, were the most noteworthy:—La Reine, bright blue, with large bells and spikes; Morena, creamy pink, with a compact spike; Starlight, dark blue with a white centre, neat bells, close spike; Velvet King, very dark blue, bold spike; Admiration, pale clear yellow, good spike; Orange Queen, pale orange red, very curious colour, with large bells; and Queen of the Reds, bright red, handsome spike, fine bells. The new Tulips were, single—Queen of the Netherlands, white flushed with rose; American Lac, bronzy pink, neat form; La Grandesse, bright scarlet; Prince of Austria, orange scarlet; and doubles, Emmeline, crimson, and Visscher, dark red and yellow. In the general collection there were seventy Hyacinths and forty Tulips, both comprising the best named varieties, one of the Tulips named Dandy being very attractive, with pretty rosy purple and white flowers. A dozen plants of *Andromeda japonica*, with large drooping panicles of white flowers, and several plants of the graceful *Spiraea confusa*, with small white flowers in close heads, were also included in Messrs. Veitch's group.

Hardy flowers were an important feature in the Show, Daffodils and Anemones being exhibited in large numbers. Messrs. Barr & Son, King Street, Covent Garden, had a particularly interesting collection, comprising 110 varieties of *Narcissus* from the Treco Abbey Gardens, Isles of Scilly, very beautiful, and representing all the sections from the pseudo-*Narcissus* to the *Tazettas*, and all gathered out of doors. From the Tooting Nursery thirty-five varieties were staged, comprising many very handsome forms. *N. pallidus præcox* was still in good condition; it has been in flower since February 15th, and will probably last for some time longer. Several of the double *N. incomparabilis*, such as Butter and Eggs, and Eggs and Bacon, yellow and orange and orange and white respectively; while of the large Trumpet Daffodils *maximus* was handsome, a smaller but very pretty variety with a neatly fringed crown—*N. scoticus*—being also well shown. Of the diminutive forms *minor*, *nanus*, and *minus*, were neat and interesting, *Anemone fulgens græca*, with very dark scarlet handsome flowers, the lovely *Chionodoxa Luciliae* and the darker *C. sardensis*, for the latter of which a certificate was awarded, imparted a welcome colour to the group. A silver Banksian medal was awarded for this collection, and similar honours were granted to the two following.

Mr. T. S. Ware, Tottenham, for a most tastefully arranged and choice group of hardy flowers. Several of the best varieties of Daffodils were included in this, together with pots of well-grown *Lachenalias*, the fragrant white *Freesia refracta alba*, the brilliant scarlet *Anemone fulgens*, the purple *Iris reticulata*, the graceful purple *Sisyrinchium grandiflorum* and its white variety *album*, the charming and brightly coloured *Primula rosea*, the curiously tinted *Iris persica*, and the bright blue *Scilla sibirica*, and *Chionodoxa Luciliae*. Amongst the *Lachenalias* were some fine spikes of the beautiful *L. Nelsoni* with large clear yellow flowers, the dark golden *L. aurea*, and the variously tinted *L. tricolor* Warei.

Messrs. J. Veitch & Sons contributed a handsome collection of Daffodils and hardy flowers neatly arranged in elegant glass bottles, which greatly improved the appearance of the group, and it is regrettable that more exhibitors do not adopt a similar system of displaying their flowers. Of the Daffodils the full *N. Telamonius plenus* was notable, as were also the Tenby Daffodil, the Paper White, the Campernelle, *N. moschatus cernuus plenus*, the Hoop Petticoat *Narciss*, and the small *nanus* and *minor*. Several fine *Polyanthus Narcissi*, especially *Soleil d'Or*, yellow and orange, and

Grand Primo, white and yellow, together with *N. cernuus pulcher*, and tortuosus, and the handsome *N. poeticus ornatus* were shown in excellent condition. A group of Amaryllises, Hyacinths, and Tulips were staged in this group, the first being noted in another page, and the bulbs in another portion of this report.

Messrs. Collins, Bros., & Gabriel, 39, Waterloo Road, were awarded a bronze medal for a pleasing collection of Daffodils, Grape Hyacinths, Snowdrops, and Anemones, the last named being very beautiful. The flowers of the single Anemone Victoria Giant, of many colours, were particularly attractive, as were also the forms of *Anemone fulgens*, semi-plena, and *græca*, both brilliant in colour.

Messrs. Paul & Son, Cheshunt, contributed a charming group of small Polyantha and other Roses, both standards and dwarfs, which were greatly admired. *R. polyantha Mignonette*, bright rose, and *Parqueritte*, white, were very pretty, bearing numbers of their small neat flowers; the White Burgundy and *R. microphylla rubra plena*, with *R. rugosa alba*, were similarly noteworthy. A few alpine and miscellaneous hardy plants were also included in the group, for which a bronze Banksian medal was awarded.

Mr. Anthony Waterer, Knap Hill, Woking, had a beautiful group of Primroses most varied in colours, and with large bold flowers; *Andromeda floribunda* and *A. japonica*, the latter profusely flowered, together with the dwarf early Heaths, *Erica herbacea carnea*, *E. mediterranea rubra* and *alba*. A bronze Banksian medal was accorded to Mr. Waterer for his bright and pleasing contribution. Mr. R. Dean, Ealing, sent several plants of Primulas, the dwarf white *P. nivea* being extremely pretty; and Mr. W. B. Hartland, Cork, showed a collection of his Daffodils, which have been previously noticed.

A silver-gilt Banksian medal was awarded to Mr. R. Clarke, Twickenham, for a remarkable group of Cyclamens comprising nearly 500 plants, the flowers large, extremely abundant, and variously coloured from pure white to the richest crimson. A silver Banksian medal was also awarded to Mr. W. Bull, Chelsea, for a valuable collection of Orchids and miscellaneous stove plants. *Dendrobium Paxtoni* had several racemes of its golden and maroon blotched flowers; *Dendrobium Farmeri roseum* had four spikes of large flowers tinged with purple and having a yellow lip; *Odontoglossum cirrhosum*, *Coclogyne Massangeana*, and *Dendrobium nobile insigne* were also notable in this group, together with the double white *Epacris onosmæ-flora fl. pl. nivalis*, the curiously coloured *Anthurium Rothschildianum*, and the bright red *Hæmanthus Kalbreyeri maximus*. A bronze medal was adjudged to Mr. J. Aldous, Gloucester Road, for a group of Palms, *Adiantums*, *Selaginellas*, and *Chrysanthemum frutescens* effectively arranged.

CERTIFICATED PLANTS.

Calanthe Sanderiana (B. S. Williams).—One of the *C. vestita* section, but much later in flowering and with large crimson flowers, the lips being of great size and exceedingly rich in colour.

Camellia Commendatore Betti (B. S. Williams).—A finely formed flower with broad round substantial petals, bright rose in colour. A very handsome variety.

Azalea Illuminator (W. Bull).—One of the *Amœna* group, but with flowers of unusual size, $1\frac{1}{2}$ inch in diameter, with round lobes, and of a warm rosy purple hue. Extremely floriferous.

Rhododendron Teysmanni (Veitch).—A distinct form, with flowers of medium size, neat in shape, and bright clear yellow in colour.

Amaryllis Paragon (Veitch).—Excellent in form, substantial symmetrical flowers, brilliant scarlet, with a white central bar in the petals.

Amaryllis Niobe (Veitch).—Very handsome, broad round petals, bright scarlet, with a white central bar.

Amaryllis The Queen (Veitch).—Extremely distinct, the flowers of good form, white, with numerous red streaks on the upper petals. Very free, the plant shown having two scapes of four flowers each.

Rose Ye Primrose Dame (H. Bennett).—One of the "pedigree seedling Tea" varieties, with neat compact blooms, very pretty in the bud, pale yellow in colour, and possessing a faint but pleasing fragrance.

Rose General Gordon (H. Bennett).—One of the same section as the above, but white, or with a very slight yellow tint; full and fragrant.

Odontoglossum Wilckeanum album (R. H. Measures, Esq.).—A pretty variety, the flowers having a pure white ground, boldly spotted with rich brown.

SCIENTIFIC COMMITTEE.—Sir J. D. Hooker in the chair.

Cypripedium, semi-double.—Dr. M. T. Masters exhibited a very curious blossom of *C. Hookeræ* (?), which he was requested to examine and report on.

Lapageria rosea, double.—He also showed a specimen received from Mr. J. C. Bowring, of Forest Farm, Windsor, on which he will report.

Arum italicum.—He also showed specimens of this plant gathered at Folkestone. The foliage is much larger than that of *A. maculatum*, and also appears earlier.

Indian Primulas and the Cold.—Mr. Wilson exhibited some trusses which had withstood severe rain, snow, and a temperature of 24° without injury.

Iris reticulata Bulbs Attacked by *Millipedes*.—Mr. McLachlan mentioned that bulbs received from Professor M. Foster and others were often attacked by these enemies after a year or two of cultivation, though Mr. Wilson and Colonel Clarke had not experienced it.

Daffodil Bulbs Diseased.—Mr. Plowright sent bulbs received from Dr. M. Foster attacked by some species of *Pleosporæ* (*Sphaeria*) with sketch of fungus. It was given to Mr. G. Murray for further examination and report.

Sweet William Leaves Attacked by Puccinia Dianthi.—He sent specimens, and observed—"This is one of the *Leptopuccinia*, the spores of which germinate as soon as they are ripe. Like *P. malvacearum* the mycelium is confined to limited circular areas, where after a time it kills the tissues of the leaf—in some cases quite through, so as to cut out or punch out a circular hole."

Willow Attacked by Cicidoneya sp.—He also sent branches of Willow with the "Cabbage gall," the tufts of leaves still adhering to the ends of the branches.

Podisoma Sabinæ.—He also forwarded a branch of Juniper, exhibiting this fungus just commencing to appear.

Plants Exhibited—Hibiscus Hügelii (?).—Col. Clarke showed this beautiful flower from Australia. It was given to the Chairman for identification.

Hybrid (?) between Begonia socotrana and B. subpeltata, rosea (?).—A plant was sent by MM. Thibaut and Keteleer with rosy pink blossoms and cordate, not peltate, leaves. The question was raised whether it was a hybrid, as it appeared to show no trace of *B. socotrana*, while the figure of *B. subpeltata* (Wight's "Icones") was hirsute and not smooth, as was the specimen sent.

Richardia athiopica with two spathes.—A specimen of this not uncommon peculiarity was sent by Mr. Axford of Twyford Moors, Winchester.

CHRYSANTHEMUMS AT POWDERHAM CASTLE.

To supplement the general descriptive notes given last week respecting the trees and gardens at Powderham Castle, I send the following jottings upon the Chrysanthemums at that establishment. I availed myself of an opportunity some time since to spend a few hours with my friend Mr. D. C. Powell, the respected gardener in charge of the place under notice, and Chrysanthemums and their culture were the principal topics. I heard in Exeter that Mr. Powell had some fine Chrysanthemums, and for once rumour was correct, though, unfortunately, the blooms were too far advanced for them to "make their mark" at the London shows. Most of the plants were arranged in two large lean-to vineries, and viewed from the front the effect was very striking. No plant can claim equality with the Chrysanthemum in effect when massed, and the visitors to the London and suburban shows—notably Kingston—will readily agree with me that they are singularly adapted for this style of arrangement. I do not say Mr. Powell could have arranged a group to surpass Mr. Orchard's premier prize group at Kingston, but early in November he would have proved a formidable opponent. Nearly all his plants were in 9-inch pots, had been stopped once early in the season, and were carrying, on an average, six blooms each. This was too many, seeing that the object was to secure fine blooms, an average of three blooms per plant in that size pot being ample. The plants ranged in height from 30 inches to 6 feet, and as every shoot was staked the blooms all showed to advantage.

The selection of varieties was a good one, but Mr. Powell, in common with many other growers who have not long turned their attention to Chrysanthemum culture, finds that there are many sorts both new and old that are useless to exhibitors, the same being also of little real service for decorative purposes. Some of the finest Japanese varieties, such as *Madame C. Audiguier*, *Thunberg*, *J. Delaux*, *Album plenum*, *Meg Merrilees*, *Criterion*, *Oracle*, *Fair Maid of Guernsey*, *Etoile du Midi*, *Striatum*, *Comte de Germiny*, *Peter the Great*, *Bouquet Fait*, *Hiver Fleur*, *Madame Rendatler*, *Mons. W. Bull*, *Elaine*, *Daimio*, *Boule d'Or*, *Grandiflorum*, *Mons. Ardène*, and *Baronne de Prailly* were particularly well represented, the majority being at their best at the time of my visit. The incurved sorts were scarcely so well represented and many of these also were too early. The best were *St. Patrick*, *Bronze Jardin des Plantes*, *Antonelli*, the *Rundle* family, *Pink Venus*, *Prince Alfred*, *Cherub*, *Mabel Ward*, *White Venns*, *Mr. Gladstone*, *White Globe*, *Queen of England*, and *Empress of India*. Mr. Powell secures where possible the crown buds, these, in his case, being the first bud that shows itself, and other intending, though inexperienced, exhibitors will do well to follow the same practice. It must be admitted that blooms resulting from these crown buds are liable to be coarser than those from "terminals," but with the Japanese especially it appears that very large blooms only will secure the awards in a large show.

Probably few private growers could point to such fine plants of *Meg Merrilees* as were grown at Powderham, specially for a display at Christmas. If I remember rightly there were fifty plants, all in 12-inch pots—many standing 4 feet high, and were bushy and neatly staked out. No disbudding is practised, Mr. Powell preferring rather that each shoot should perfect several flowers, and a very pretty and elegant plume is the result. The plants were being retarded in a cool position, and as they were very healthy and well furnished with foliage, the ultimate effect can easily be imagined.

In the other plant and fruit houses are grown the usual assortment of stove and greenhouse plants, none being admitted but what are really useful, and all giving proof of good culture.—W. IGGULDEN.

ROYAL METEOROLOGICAL SOCIETY.

THIS Society opened its sixth annual Exhibition of instruments on Wednesday, the 18th inst., at the Institution of Civil Engineers, 25, Great George Street. This Exhibition is devoted to Sunshine Recorders and Solar and Terrestrial Instruments.

The first attempt at obtaining an instrumental record of the amount of sunshine was made by Mr. J. F. Campbell of Islay, in the year 1854, when he mounted a hollow glass sphere filled with acidulated water in the centre of a cup of mahogany so arranged that the sun's rays were focussed on the interior of the cup and burned it. The lines of burning therefore indicated the existence of sunshine. Solid glass spheres have been substituted for the hollow ones, and cards in metal frames have replaced the wood, but in its principle the sunshine recorder of 1885 differs little from that erected on Richmond Terrace, Whitehall, thirty years ago. Other modes of recording sunshine are based on the action of the rays of the other end of the spectrum on the actinic instead of the heat rays. Among workers in this direction may be mentioned Marchand of Fécamp, Sir Henry Roscoe, and others. The most recent improvements in this direction are those by McLeod and by Jordan.

With regard to Solar Radiation Thermometers, the successive stages in the assumed perfecting of these instruments have been as follows:—An ordinary mercurial thermometer acts as a spherical mirror, and reflects the rays which fall upon it. To lessen this the bulbs were first made with black glass. Moreover, originally the degree marks were put upon the supporting slab, then they were put upon the tubes of the thermometers. It was then found that in a position where two thermometers with similarly coated bulbs were exposed to the sun, but one was exposed to more wind than the other, the indicated temperatures varied greatly. To avoid this, it was proposed that the thermometer should be inserted in a glass shield exhausted of air. Various forms of mounting have been adopted, but the chief efforts have been expended in determining the influence of the amount of air left in the so-called vacuum. The next stage was, that inasmuch as black glass had a bright surface, there was still much light reflected, and therefore the surface was dulled with a coat of lampblack, so that all heat falling upon the bulb might be absorbed. Subsequently, owing to the influence of the lower temperature of the unblackened thermometer tube, about 1 inch of it was coated like the bulb. As evidence of the degree of exhaustion, a small mercurial pressure gauge was attached to the thermometer, and by other makers platinum wires were soldered through the shield, so that the stratification of the electric arc might indicate the amount of air still left.

With regard to Terrestrial Radiation Thermometers the pattern of instrument used has varied very little. The Rutherford minimum has almost always been used, but its sensitiveness has gradually been increased; the spherical bulb was replaced by a cylinder, the cylinder was elongated and bifurcated, and eventually, in order to strengthen the forks, they were united into what is known as a "link." Another plan was to flatten the cylindrical bulb into as thin a plate as possible, this giving a maximum of surface in proportion to the contents. The bulb was also made double, and thus we have the so-called "bottle" pattern, and then the tube was led into the side of the bottle, and both ends of the bottle were left open, and so we have the "open cylinder," a remarkable specimen of glass-blowing. Then there have been two patterns of mercurial thermometers, Casella's and Negretti's. Difficulties have arisen from the degree marks being obliterated by the weather. To guard against this, the tube has been enclosed in what are known as Leach's shields, and many attempts have been made to render the joint at the entrance of the tube watertight. This is not easy, because the thermometer is exposed to a great range of temperature, and the air inside the shield varies so much in volume that it forces its way through almost every joint. The object is, however, effected when the external jacket is sealed on the stem near the bulb.

In addition to specimens illustrating the various patterns of the above instruments, the Exhibition also included a number of new instruments, and many interesting photographs, sketches, and diagrams. The photographs of clouds and lightning were very good. At the meeting of the Society, the President, Mr. R. H. Scott, F.R.S., read a paper giving a brief account of the various instruments and arrangements to be found in the Exhibition for the purposes of recording solar and terrestrial radiation, and the duration of sunshine, both in regard of its light and its heat, the last-named being obtained by means of the sunshine recorders, which are now pretty generally used. He exhibited twelve monthly maps showing the per-centage proportion of hours of recorded sunshine to the hours the sun was above the horizon in the various districts of the United Kingdom. He stated that the features which strike anyone on examining the maps of sunshine, which are for the most part for the five last summers and for the four last winters, excluding January to March, 1885, which has not yet expired, are:—First, the broad fact that the extreme south-western and southern stations are the sunniest, as has already frequently been pointed out. Jersey is undoubtedly the most favoured of our stations in this particular. Second, that in the late autumn and winter Ireland is much sunnier than Great Britain, Dublin having absolutely the highest per-centage of possible duration of sunshine in November and December, and being only equalled by Jersey in January. The Dublin instrument is not situated in the city, but at the Mountjoy Barracks in the Phoenix Park, beyond the Vice-regal Lodge. The north-east of Scotland is also exceptionally bright, as the station, Aberdeen, lies to leeward of the Grampians. In April the line of 40 per cent of possible duration takes in Jersey, Cornwall, Pembroke-shire, the Isle of Man, and the whole of Ireland, except Armagh. The maximum of the year occurs in May, and the amount rises to 50 per cent. (nearly to sixty in Jersey) over the district just mentioned as enjoying 40 per cent. in April. In June there is a falling off, which is continued into July, and even into August in the western Highlands. In the south of England, however, a second maximum occurs in August, the figure for Jersey rising to 50 per cent. This is mainly due to the exceptionally bright weather of August, 1884, in the southern counties of England. In September Ireland shows a falling-off, and the greatest degree of cloudiness is in Lincolnshire. In October the midland counties of England are the worst off. In November the line of 40 per cent. encloses two districts, one Dublin, already mentioned, the other the eastern counties (Cambridge and Beccles). The absolutely highest monthly per-centages in the period under consideration are in the month of May, 1882, in which St. Anne's Head, Milford Haven, had 62 per cent., while Geldeston (Beccles), Douglas (Isle of Man), and Southbourne (Bournemouth), shows 61 per cent.

The Exhibition remained open till the 20th instant.

VINERIES, VINE BORDERS, AND VINES.

(Continued from page 231.)

TEMPERATURE AND ATMOSPHERIC MOISTURE.—The water should be kept sufficiently warm in the pipes to maintain the temperature at 60° by night and 70° by day, raising it to 85° or 90° with sun heat, and plenty of atmospheric moisture at closing time. Syringe the Vines and the house generally, especially underneath and between the hot-water pipes and the wall morning and afternoon with tepid water to promote a genial temperature and to keep the leaves free from the attacks of red spider. With this object in view, also have the evaporating troughs filled with strong liquid manure, the vapour from which will be beneficial to the

Vines. During bright sunny weather the surface of the border and pathway should be damped about midday.

VENTILATION.—The time of admitting fresh air to the vineries in the morning and stopping it in the afternoon must be regulated in accordance with the weather at the time, as the temperature recorded in each house, and not the particular hour or minute, should be the guide in this important matter. Hence the ventilators may be slightly opened as soon as the thermometer registers 80° on bright mornings, afterwards increasing and decreasing it with the rise and fall of the temperature until closing time. This should be varied from three o'clock in the afternoon in April to 4 30 towards the end of August, after which date air may be given more freely day and night to ripen the wood. In the event of the vineries being of modern erection, and, consequently, nearly air-tight, the top and front ventilators can be opened slightly late each evening from April to the end of August and closed early in the morning, when the Vines and house should be well syringed.

WATERING.—The Vines will not require much water at the roots until the latter have pushed well into the soil in all directions, when they should have liberal supplies of clear water, following with a few tubfuls of liquid manure or Beeson's manure at the rate of 3 lbs. to 10 gallons of water to each strip of border.

STOPPING.—As soon as the Vines have started into growth and furnished the first 12 or 18 inches of the trellis stop them, and pinch out the laterals resulting from this stopping as soon as they appear. This will cause the latest bud at the base—which, if the laterals were allowed to grow, as is frequently the case, would not move until next year—to push into growth after the lapse of eight or ten days, the sap, in the meantime, being necessarily directed to the development of both stem and buds below. Thus treated, a uniform plumpness of the buds is secured the entire length of the rods. When the Vines so stopped have each made a couple of feet of fresh growth stop them again in the manner indicated, and repeat the operation to the end of the growing season, except in the case of the temporary Vines, which are to be cut down after they have been fruited next year. These may be pinched hard at 8 feet from the bottom of the trellis; but should there be any danger of the buds in the axils of the leaves bursting a few of the laterals and sub-laterals at the top of each rod so disposed can be allowed to grow to draw off the sap, and thus prevent the fruit buds pushing into growth. In order to concentrate all the energies of the Vine to the thickening of the rods and the enlargement and consolidation of the buds proceeding from its base, the lateral shoots springing from the same source must be stopped at the first joint, as also should the sub-laterals, and those which may afterwards appear should be pinched close back. These remarks are also applicable to that portion of the Vine between the ground and trellis to insure thickness of main stem from its base. Better results will be secured from Vines thus treated than would be the case from rods, the laterals of which have been allowed to grow uninterruptedly during the past season with a view to encouraging a corresponding amount of growth at the roots. I have tried both methods of stopping and non-stopping the shoots side by side on eighty-eight Vines here a few years since to prove which one was right, and the result of the experiment was in favour of the one recommended. I know that I am on delicate though perfectly safe ground in this matter. Some may aver that by following this close-pinching system in preference to that of free lateral growth root-action is somewhat impeded, but if young Vines produce thicker and more consolidated canes furnished with large filbert-like buds in the axils of their leaves than would otherwise be the case the condition of the roots may be considered highly satisfactory.

PRUNING.—There is not much to be said on the subject of pruning Vines the first year. The spurs should be removed from both temporary and permanent Vines, and that the latter, instead of cutting them down to within a couple of feet of the bottom of the trellis—a practice deservedly becoming a thing of the past—should be shortened to 9 or 10 feet from this point, and the former to 7 feet.

DISBUDDING AND CROPPING.—As soon as the Vines push into growth the following year they must be disbudded. Of course, the strongest and best placed shoots may be retained diagonally on each side of the rods at from 15 to 18 inches apart. Six bunches on each rod—one more or less according to the strength of the latter—will be sufficient crop for the temporary Vines to ripen satisfactorily. If it is necessary to take three or four bunches off each permanent Vine the first year after planting they should be distributed equally over each entire length of rod; but though the laterals may show two or three bunches each, if the permanent welfare of the Vines is to be considered, as it should be, do not be tempted to allow them to carry a greater number of bunches than that indicated. Thus it will be seen that Vines treated as I have endeavoured to describe, will fill the house with fruit-bearing wood within two years from the time the eyes were inserted in 3-inch pots to root.—H. W. WARD, *Longford Castle, Salisbury.*

HOW WE HAVE GROWN OUR SEEDLING GLADIOLI.

EARLY in February, 1881, we sowed the seed in boxes, placing them in a dung frame, where there was a little bottom heat. When the seedlings had grown about 2 inches high they were hardened and placed in a sheltered position, where they stood all the summer. At the beginning of October many had completed their growth, but most of them were still fresh and growing. At that time we shifted them under glass to help them to finish their growth, as the soil in the boxes was saturated with the autumn rains. Many of the earlier-ripened corms at once started growth. In November the boxes were removed into the potting shed,

where they remained until the beginning of February, 1882, when they were taken out of the soil. Several had grown from 3 to 7 inches long; these were placed singly into small 60-size pots. The others were all planted thickly in boxes of light rich soil. The whole were then placed in a little heat for about three weeks, and then stood in a cold frame until the beginning of April, when they were planted in front of a wall upon a sunny border facing the south. Some time previous to this we prepared the ground for them as follows: by trenching it 2 feet deep, 5 inches of decayed hotbed manure was then dug into the soil about 10 inches from the surface, then we put 5 inches of leaf mould and burnt ashes (mixed) from the refuse heap upon the top and pointed it in. So well were we satisfied with the growth made, that in preparing the soil for them we have annually followed the same plan, the only addition being a little soot and salt thrown over the surface after all was completed.

In June the ground received a mulching of manure, water was given in dry weather, the plants made strong healthy growth, and in September and October many of them produced strong flowering spikes, several having as many as twenty-one blooms. After the middle of November (the plants were still as fresh and green as at midsummer) we lifted them from the ground, but instead of cutting the bulbs from the stems and drying them, they were simply laid one above another in a heap in the potting shed; in severe weather they were covered to keep the frost from them. As the bulbs ripened and parted from the stems they were placed in boxes among light soil and grown on until the beginning of April, 1883, when they were again planted out in a sunny sheltered position, where they made splendid growth, and produced magnificent spikes. Many of the plants were over 5 feet high, one variety measured 6 feet 2 inches.

The corms were lifted about the same time as on former occasions, and kept in the same manner during winter. Owing to April, 1884, being a cold, stormy, unsettled month, we did not have them planted out until the end of the month: most of the plants in the boxes had by this time grown 12 inches high. We were afraid the plants (being so large) would receive a check, and not do so well; however, such was not the case, as they never did better, forming strong, healthy, vigorous plants, which produced bold massive spikes, some of them having twenty-six large blooms upon the single spike. Several plants were over 6 feet high, the tallest measured 6 feet 11 inches.—JOSEPH OLIVER, *Eslington Park, Alnwick.*

ROYAL BOTANIC SOCIETY.—MARCH 25TH.

THE first spring Show of the season at Regent's Park was held yesterday (Wednesday), and proved a satisfactory and successful gathering. Many of the exhibitors who were at South Kensington on the previous day also appeared there, but several additional ones were present, especially in the classes. The non-competing exhibits were, however, collectively the most important, and really constituted the greater portion of the Show. Hyacinths, Tulips, Daffodils, and hardy flowers were abundantly represented, producing a brilliant and varied effect in the long corridor and part of the large conservatory.

Hyacinths.—In the two classes for these there were seven exhibitors, the majority staging very good specimens. Mr. H. Eason, gardener to E. B. Noakes, Esq., Hope Cottage, Highgate, was first in the amateurs' class for twelve fine plants, large compact spikes of the following varieties:—Koh-i-Noor, Marie, Grand Maitre, Marchioness of Lorne, Lord Macaulay, King of the Blues, Baroness Von Tuyl, Von Schiller, General Havelock, and Lady Derby. Mr. J. Douglas, gardener to F. Whitbourn, Esq., Great Gearies, Ilford, Essex, was a close second with even but slightly smaller spikes. In the nurserymen's classes Messrs. H. Williams & Son, Fortis Green, Finchley, were first with beautiful examples of Czar Peter, King of the Blues, Lord Derby, Von Schiller, Grandeur à Merveille, Mont Blanc, Morena, King of the Yellows, Marie, La Grandeur, and Lord Macaulay. Mr. H. R. Wright, Lee, Kent, followed with a good selection; and Messrs. Cutbush & Son, Highgate, were third.

Tulips.—These also were well represented, Mr. J. Douglas securing first honours in the amateurs' class with finely grown and handsome specimens of Joost Van Vondel, the White Joost Van Vondel, Proserpine, and Van der Neer; three bulbs in a pot, well furnished with foliage, and bearing large richly coloured flowers. Mr. Eason was placed second with smaller plants. There were four competitors in the nurserymen's class, Messrs. W. Cutbush and Sons taking first honours with Keizers Kroon, Fabiola, Rose Gris de Lin, Joost Van Vondel, Ophir d'Or, Proserpine, Cottage Maid, Hector, Van der Neer, and Vermillion Brilliant. Messrs. H. Williams & Son and H. R. Wright followed in this class with good plants.

Cyclamens.—A beautiful bank of these was formed in the conservatory, the plants being most profusely flowered. Mr. F. J. Hill, gardener to H. Little, Esq., Hillingdon Place, Uxbridge, had the best twelve plants in the amateurs' class, most of his varieties being richly coloured and in splendid condition. Mr. Wiggins, gardener to W. Clay, Esq., Grove Road, Kensington, was second with well-grown plants. In the open class Mr. H. B. Smith, Ealing, Dean, Mr. F. J. Hill, and Mr. J. James, Woodside, Farnham Royal, were the prizetakers, all exhibiting well.

Crocuses were only represented by two collections of a dozen pots, Mr. J. Douglas leading with profusely flowered specimens, and Messrs. W. Cutbush followed with a good collection, but hardly forward enough. Azaleas were numerous, but with a few exceptions they were not of first-rate merit. Mr. H. James, Castle Nursery, Lower Norwood, had six fairly good plants, a standard of Flag of Truce being particularly fine, and they well deserved the first prize awarded for them. The best amongst the amateurs were six from Mr. H. Eason, which took the first place in the class. They were dwarf semi-globular plants of Model, Roi Leopold, Roi d'Holland, Vittata crispiflora, François Vervaene, and Apollon.

Lilies of the Valley were well shown by Mr. W. J. Watson, Newcastle-on-Tyne, Messrs. H. Williams & Son, and H. R. Wright, who took the prizes in that order.

Amaryllises.—With twelve Amaryllises Mr. J. Douglas secured the first prize, being the only exhibitor. His plants were strong and well flowered,

some spikes having four and five flowers each. Dr. Masters, Sir Garnet Wolseley, Calypso, Lady Hulse, Albert Victor, Georgei, and several seedlings from Empress of India, all very distinct and good. Special prizes were also provided by an amateur. The best seedling was shown by Mr. J. Douglas and named Helen Lodge, it is a handsome variety with well formed flowers, rich crimson with a white central star. Mr. F. J. Hill was awarded the second prize for Mrs. H. Little, dark crimson tipped with white, fine shape. For the best six Amaryllises, the same exhibitor was first with John Heal, Great Gearies, bright clear scarlet, with a white central star; Empress of India, Madonna, James Douglas, and Marcus Aurelius. The two first named were awarded first prizes as the best light and dark varieties respectively, and the next two were also awarded the second prizes in the same order. Mr. Butler, gardener to H. H. Gibbs, Esq., was awarded the second prize for six Amaryllises with brightly coloured varieties.

Polyanthus Narcissi were shown by Messrs. H. Williams & Sons, Finchley, J. Douglas and H. Eason, all the specimens being properly flowered.

Messrs. Paul & Son, Cheshunt, were the only exhibitors of six forced Roses, and were awarded the first prize for dwarf healthy specimens freely flowered of Marquiso de Castellane, Perfection de Monplaisir, Alba rosea, Souvenir d'un Ami, Duke of Teck, La France, and Catherine Soupert.

Of hardy plants and hardy Primulas Mr. J. Douglas was the only exhibitor, taking the first prize in each class. The Primulas included P. nivalis, P. obconica, P. marginata cœrulea, P. Nelsoni hybrida, and P. cortusoides. In the hardy plants, Anemone ranunculoides, Sanguinaria canadensis, Fritillaria meleagris and alba, Hellebores, Grape Hyacinths, and Narcissus bicolor Horsfieldii.

Mr. J. Douglas was as usual first with his six giant Deutzias laden with flowers, Mr. Eason and Mr. G. Wheeler following in that order with smaller plants. Messrs. Hill, J. Carter & Co., and H. Williams & Sons were the prizetakers with Primulas.

Miscellaneous Groups.—Mr. B. S. Williams, Upper Holloway, had a most extensive and beautiful group of Hyacinths, Tulips, Cyclamens, and other plants (large silver medal). Messrs. W. Cutbush & Son, Highgate, showed large and handsome groups of Hyacinths, Tulips, and Crocuses (small silver medal). M. J. James, Woodside, Farnham Royal, sent a superb collection of Cinerarias of the usual fine substance and rich qualities (bronze medal). Messrs. J. Veitch & Sons, Chelsea, showed a group of Amaryllises, greenhouse Rhododendrons, and Daffodils, comprising many new plants, for which certificates were awarded. Mr. Anthony Waterer, Woking, sent a fine group of Primroses and Andromedas (bronze medal). Messrs. Paul & Son, Cheshunt, contributed a beautiful group of Roses in pots freely flowered (large bronze medal). Mr. H. B. Smith, Ealing Dean, had a remarkably fine group of Cyclamens (large bronze medal). Mr. H. R. Wright, Lee, Kent, had an extensive group of Tulips (large bronze medal). Mr. Wiggins had a group of Cyclamens (certificate). Mr. F. J. Hill had a beautiful group of Lycastes (certificate). Mr. Eason had a group of bulbs (certificate). Messrs. H. Cannell & Sons, Swanley, sent a beautiful collection of Zonal Pelargoniums, very rich in colour. Messrs. Paul & Son, Cheshunt, had a group of Alpine and hardy plants (certificate). Mr. R. Clark, Twickenham, showed a group of handsome Cyclamens. Mr. H. R. Price, gardener to P. M. Munro, Esq., Malvern Lodge, Surbiton, exhibited a group of Cinerarias (certificate). Mr. W. Bull, Chelsea, showed a group of new Orchids and other plants. Messrs. J. Carter & Co., High Holborn, sent some fine examples of Vallota purpurea, and pans of Primula spectabilis and Soldanella montana. Messrs. Collins, Bros. and Gabriel contributed a group of Anemones, Daffodils, and other hardy flowers (large bronze medal). Mr. T. S. Ware, Tottenham, had a pretty collection of hardy flowers (certificate). Messrs. Hooper & Co., Covent Garden, had several fine Tree Carnations, the flowers large and brightly coloured. Messrs. Barr & Son, King Street, Covent Garden, had an extensive collection of Daffodils and hardy flowers in the conservatory similar to that at Kensington yesterday (bronze medal).



HARDY FRUIT GARDEN.

WELL ripened wood is crowded with fruit buds swelling so fast that Pear trees are already white with them, and these are just now a source of mingled pleasure and anxiety. If we are only favoured with soft genial weather while the blossom expands and the fruit sets, a year of great abundance is before us; we are therefore naturally anxious, for do what we may it is impossible to afford adequate protection to huge pyramids 14 or 15 feet in height, unless such protection already exists in the form of thick close belts of lofty evergreen Fir trees, and numerous intersecting hedges of dense-growing Thuias in the interior of the fruit garden, as we have so frequently advised. On plateaus and the upper slopes of valleys trees so sheltered are tolerably safe from the assaults of sweeping nor'easters and those late spring frosts so prevalent and so hurtful on exposed or low-lying damp ground. Full well do we know that to mention this matter now can do no good, but we do so in order that the importance of protection may be fully realised wherever attention has not hitherto been given it. For wall trees much may be done by broad copings, and screens of frigi domo, or double screens of Haythorn's hexagon netting stretched securely upon frames, so as not to be blown about by high winds. Blossom may also be retarded by the use of water, but due care must be taken not to carry the use of them to a hurtful extreme. Thatched hurdles and Fir branches may also be made good use of as a means of protection, and all should be done that is possible to screen the tender blossom upon which our hopes of a fruit crop depend. Dried fern scattered thinly upon Gooseberry bushes serves admirably to keep off

rost, and where the bushes are enclosed under wire netting fern thrown upon the netting answers the same purpose quite well. Strawberry beds if at all weedy should be hoed, and in doing this it is well to loosen the whole of the surface of the soil between the plants. Then when growth begins sewage may be poured on freely over the whole of the surface with material advantage both to foliage and blossom. In a light sandy porous soil this early use of sewage insures a heavy crop of fine fruit if the plants are healthy and strong, for the soil is charged with nutriment which stimulates vigorous growth before the flowers expand; but if the sewage is withheld till the fruit is set, as is often done, it will be too late to achieve our object of producing large bold flower clusters borne upon sturdy stems.

FRUIT FORCING.

PEACHES AND NECTARINES.—The prevalence of north-easterly winds and frost at night has necessitated incessant firing, notwithstanding which the growth has been satisfactory in all cases, more especially of the earliest fruit trees, the young shoots of which having been neatly heeled-in with a tie close to the base, and the superfluous growths removed or pinched back to form spurs. The trees should be allowed to make free growth until they are sufficiently advanced for the general tying down to the trellis; but they must not be allowed to come in contact with the glass, and if any of the shoots show a disposition to become too strong, pinch out the points before they have time to become unduly gross. Proceed with thinning the fruit, taking into account in performing this operation the strength of the trees, and when the general health is good few need be left for removal after the stoning period, whilst with trees that are gross or otherwise unhealthy a liberal per-centage must be left for removal after stoning. Size and quality being the first considerations, one fruit to every square foot of trellis covered by the trees is a good crop, and any excess will affect the weight of the fruit and its quality, seriously crippling the trees for future crops, if, indeed, it does not shorten their existence. Under the influence of drying winds and bright sunshine the trees will require good syringing with tepid soft water twice a day, and, if not already done, the surface roots should be mulched with short manure and well watered—in the first instance with pure tepid water and afterwards with tepid liquid manure. Turn off the heat early when the sun is likely to be powerful, which will lessen the necessity for so much air-giving, which is inadvisable when a cold sharp wind prevails, admitting no more at such times than is absolutely necessary to prevent the temperature rising too high. Aim at a steady minimum temperature of 60°, and 5° more by day from fire heat, with 10° to 15° from sun heat until after the fruit is stoned.

Succession Houses.—Disbud the trees, commencing at the extremities and work gradually to the base. Pinch for spurs, or cut away all shoots that are not required for next year's crop or the support of the present one. Fumigate as soon as the trees are out of bloom, being careful to have the foliage dry and not to give an overdose, as the foliage of the Peach is soon injured. Rub off all small and badly placed fruits as soon as the most prominent show signs of taking the lead. Syringe vigorously morning and afternoon, taking care to wet the under side of the leaves and the strong shoots. The afternoon syringing should be done sufficiently early to allow the foliage to become dry before night. The morning syringing should be done early, giving a little air shortly after, gradually increasing it, and close with a rise from sun heat about 3 P.M. Water all inside borders copiously, and keep them mulched with short manure.

Late Houses.—Turn on the heat in the early part of the day and maintain it at 50° after the blossoms are expanded, and admit a little air day and night, so as to cause a circulation of air. The night temperature should be kept from falling below 40°. Admit air freely when the weather is favourable, not allowing an advance above 55° without free ventilation, and full at 60° to 65°. Shake the trees, or by other means distribute the pollen when the air is warm and dry. In unheated houses, which are a great mistake, the object should be to ventilate as early in the day as is consistent with safety, increasing it with the solar heat, and having it full at 50°, and by closing early in the afternoon sufficient heat may be enclosed to prevent the temperature falling through the night to an injuriously low degree. Whatever watering is necessary should be done in the morning of a likely fine day, so that any superfluous moisture may be expelled before closing time.

PINES.—March winds have such an influence on highly heated structures as to necessitate the relaxation of fixed rules in relation to internal temperatures, which should be permitted to the extent of 5° or so according to circumstances. Increased attention will now be necessary on account of the activity commencing in the plants. A strict regard must be given the state of the heat at the roots lest it should become too hot, and thereby injuriously affect the plants. A temperature of 90° to 95° at the base of the pots is certainly safe and reliable, above which there is danger. In the case of fermenting beds, which are much influenced by atmospheric depressions and elevations, keep abundance of moisture in the compartments where fruit is swelling, and let the heat be kept at 70° at night, and 75° to 80° in the daytime. Ventilate at 80°, and close at from 80° to 85° with sun heat. Syringe occasionally overhead at closing time, avoiding all such plants as are in flower. Remove all superfluous suckers before they become large, unless stock is wanted. The plants should be examined individually at least once every week, and watered freely when needed with moderately strong liquid manure, always being careful to use it in a tepid state. In the successional houses keep an invigorating and genial atmosphere about the plants, maintaining a night temperature of about 65°, and 70° by day artificially, with a rise of 10° to 15° from sun. Suckers are best kept rather close, and during very sunny

weather a slight shade should be used, the night temperature being kept at 60°, and that will suffice for the day by artificial means, the object being not to accelerate top growth, but to cause the free rooting of the suckers before top growth takes place.

CHERRY HOUSE.—Cherry trees are liable to be attacked by black and green aphides, their presence being indicated by the curling up of the leaves. If either of these pests infest the trees means should be employed to eradicate them at once. Perhaps there is nothing so efficacious for exterminating these as quassia water. Quassia chips at the rate of 2 ozs. to a gallon of cold water allowed to stand twenty-four hours should be applied by means of a fine syringe, being careful to wet every part thoroughly, which may be repeated as necessity arise until the fruit is about half grown, when it should be discontinued until the fruit is cleared off the trees, when, if necessity arise, it may be used again. In order that the liquid may pass through the syringe freely, the chips should be enclosed in a bag and submerged, and are all the better if boiled for a quarter of an hour. Grubs are also very troublesome, and are indicated by the curling of the leaves. They can only be disposed of by hand-pricking, a tedious though effectual process. As growth in the trees and likewise fruit is now proceeding rapidly, employ the syringe forcibly over the trees in the morning, and again in the early part of the afternoon of sunny days. Commence ventilating the house at 55°, increasing it with the sun heat, and when the external air is mild admit air to the fullest extent between 60° and 65°, and close for the day at 60°. During the night the temperature should be kept at about 50°, but a comparatively low night temperature is best. In order to swell off the Cherries satisfactorily the borders should be well mulched, and a little stimulating agent given in the shape of weak tepid liquid manure. All growths, except the terminal ones and those properly placed for laying in where fresh ones are required, should be pinched at the fifth or sixth joint, and the others may be heeled in at the base and tied in when they require it.

PLANT HOUSES.

Greenhouse Climbers.—The various climbing plants that are used for furnishing the roof of these structures should be pruned and trained before they commence growth. Great care should be taken to destroy all insects that may have become established upon them, or much trouble and annoyance will be caused. The plants employed for this purpose, whether in pots or small borders, should have a top-dressing at once. As much of the surface soil as possible must be removed, and fresh rich material supplied. A compost of good fibry loam and one-third of decayed manure is very suitable for this purpose, and will be found to assist the plants wonderfully during growth. Every precaution must be taken to protect the young shoots of *Lapagerias* from slugs. The compost recommended will be very suitable for the plants if the border in which they are growing is well filled with roots.

Primulas.—For the earliest batch of these plants seed can be sown. Pots or pans must be filled with a light compost composed of loam, half-decayed leaf mould, and a little sand, the two former being used in equal proportion, and passed through a fine sieve. A little of the fine leaf mould should be scattered on the surface, and then sow the seed. Primula seed must never be covered, or it will fail to germinate. After sowing give a watering, and cover the pot or pan with a square of glass, upon which is placed a covering of damp moss to prevent evaporation; if possible plunge the pot to prevent the soil drying round the sides, for if the soil once becomes dry after the seed is sown failure is sure to be the result. Ventilate gradually after the seedlings are up, and grow them close to the glass in a temperature of 60°. As soon as the seedlings are large enough they may be pricked out into other pots or pans, giving them sufficient room to grow without drawing until they are large enough for 2-inch pots. The young plants must be shaded from strong sun.

Double Primulas.—For supplying flowers for cutting in quantity these are amongst the most serviceable plants that can be grown. Many of those that commenced flowering in early autumn will now have ceased to do so. The lower leaves may be removed and the plants earthed up with light sandy soil, and if kept moderately moist in a temperature of 55°, and partially shaded from strong sun, they will soon emit roots from the collar, which allows of the plants being divided and the stock increased without the risk of losing any of the plants. If unnecessary to increase the stock this is a good plan, and allows of the plants being potted again deeply and many of the lower roots removed.

Primula obconica.—This is one of the finest and freest flowering plants that can be grown in pots for decoration during the autumn, winter, and spring. It will continue flowering from October until May; in fact, it need never be removed from the conservatory. The seed may be sown at once on the surface of the soil in heat, the treatment given for the other Primulas suiting this exactly; and if the same liberal treatment is accorded it as is bestowed upon the Chinese varieties it will amply repay for the care. The seed is much longer in germinating than that of the ordinary Primula.

Begonias.—Seed may be sown of the tuberous Begonias as well as of *B. semperflorens*. The seed is very fine, and should be sown on the surface of the soil, the pot or pan being covered with glass and shaded until germination takes place. Gloxinia and Cineraria seed may be sown under the same conditions, removing the latter to a temperature of 50° to 55° as soon as the seedlings are well up, for nothing is gained by keeping them in brisk heat.

Celosias.—Seed can be sown at once where these plants are appreciated for summer decoration. Sow in heat, lightly covering with fine soil. As soon as the seedlings are large enough they must be pricked out singly

into other pots until they are ready for placing singly into 5-inch pots. Care must be taken that the plants are not kept in too strong heat to draw them weakly. To insure large well-developed plumes the plants must be grown sturdily. Sow also seed of Cockscombs, Balsams, Browallias, and *Grevillea robusta*. The remarks given above apply to these with equal force.

Rhodanthe Manglesii.—This and its white variety are unquestionably amongst the easiest and most effective decorative plants that can be grown. Pots 5 inches in diameter are large enough. They should be filled with moderately rich soil, consisting of loam, one-seventh of manure and a little sand, and the seed being sown thinly over the surface and lightly covered with fine soil. The pots may be placed in an intermediate temperature until the seed has germinated, when the plants may be gradually hardened and grown close to the glass in cold frames. As soon as the seedlings are large enough they may be thinned, leaving sufficient to cover the surface of the pots by the time the plants are about 1 inch high. The soil must never be allowed to get dry, and ventilation must be free on all favourable occasions. Heat or a close atmosphere will soon ruin them.

THE BEE-KEEPER.

NOTES ON BEES.

FEEDING—VENTILATING—JOINING—FRATERNISING.

THE weather in the north still remains untoward; the recent frost has destroyed the anthers of the early Crocuses, so that the bees work long and in vain on them for pollen. There are but few flowers out that are pollen-yielding, unless in sheltered nooks where the Hazels and Alders have been for the past four weeks displaying their proliferous catkins. In such places as the latter artificial pollen was unnecessary, but where these were absent peameal has been greatly taken advantage of, and will be continued until the flowers are out in profusion near the apiary, as it is much safer to induce the bees to work on peameal near the apiary, where they can return in safety to their hives, than to allow them to take long flights in search of pollen from which many would not return.

As breeding advances much moisture is generated, and unless carried off by ventilation above, or from beneath by perforated floors, much mischief will follow; in fact, it is no stretch of imagination to say that the condensing of perspiration inside the hive is one of the causes of foul brood. Those who wish to keep hives healthy should never make any alteration that suspends the carrying-off of damp and vitiated air; this is even more essential during the breeding season than during the resting one. Unless where it is suspected that the hive is queenless, or is unfertilised, or that the interior of the hive is damp, leave all undisturbed. If any are queenless or unfertilised, destroy the queen and utilise the bees by joining them to another hive near if thought desirable; if not, it is better to kill them at once, because though a successful union is effected the first flight they take will find them on their old stand. Some of them might enter the other hives and depose their queens. The joining of swarms at this season requires great caution, and considering the casualties that occur through this, it is better not to attempt it unless with an adjoining hive. If any hives are found damp (which should not be if proper care has been exercised) transfer the combs that are dry to a clean dry hive, and fill up the space with those kept in reserve from last autumn. If the combs are fixed as in straw hives, expose them to the sun as long as can be done with safety the first fine day, and if the floor is made ventilating, or an eke put underneath, it will assist the drying process greatly.

Keep strict watch as the season advances that no bees suffer by want of food; if this is suspected feed them at once and as quickly as they will take it. Regulate the entrances according to the strength of the hive, and keep a record of casualties and their causes, so that they may be avoided in the future. Stronger and robber bees should be specially guarded against. Stronger bees often kill the queen of the hive they enter; but this is not always the case, as has been fully demonstrated by the introduction of foreign varieties, but some varieties have a greater propensity for this than others. The Ligurian, for example, eludes the most vigilant sentries, immediately acquiring the watchword, or whatever it is they recognise each other by, fraternising on the most seemingly friendly terms, sharing in all the labours of the hive, and in a short time are the most dreaded sentries that others can encounter.

This changing of hives and forming a peaceful alliance is one of those things that naturalists have as yet not turned their attention to, and which remains a mystery. Shortly after the introduction of the Ligurian I observed this vagary prominently

in some of my hives, and asked Mr. Woodbury about it, but he seemed to think they did not differ from the common bee in this respect. The case was this: A Ligurian hive refused to increase in numbers through detachments leaving and entering other hives. One of these hives stood at a distance of two miles, in a bee line. A detachment of about a thousand Ligurian bees entered this hive, fraternising with its bees; the owner, however, believing they came upon an errand of robbery, killed many of them, but this was after they had fraternised. Another instance similar to the above. A detachment of bees from the same hive entered a hive about a quarter of a mile distant, fraternised and remained with them. The Ligurian hive became so weakened through this desertion that at last I only overcame the difficulty by joining a swarm to the queen, about all that remained of what was a few months previously a strong stock.

The foregoing is a rare and exceptional case, but still instances of bees deserting their hives is not so uncommon as we are apt to believe. At the Heather, for example, where a great number of hives are placed in lines and near each other, the outermost hive or hives draw or receive many bees from other hives, and often consequently accumulate a great weight of honey. The bee-keepers are alive to this freak of the bees, and to prevent their bees joining with their neighbours, detach as much as possible each lot, and if any bee-keeper place his bees at the end of a neighbour's line, it is looked upon as an act of dishonesty which few will dare to attempt. Last summer a hive stood about the centre of twenty, at 12 feet apart, and was very weighty; the bees left it and entered the one next it, leaving the queen and a few workers only behind. I could quote many similar cases, but as I cannot explain the cause, consider the above sufficient until more light can be thrown on the subject.

SUMMER MANIPULATIONS OF PEAMEAL.

In amplification of my remarks at page 119, I may state that the reason I use a zinc cylinder that turns with the wind is twofold. The zinc being a conductor, when the sun shines the temperature within is high, and keeps the bees lively, though the air is chilly. The opening turning from the wind keeps the meal dry, prevents waste, and shelters the bees. Water, unless when it is situated far from the apiary, is not necessary, but when the bees have a long distance to fly for it, or to such places that are likely to be destructive to them, they should be provided with water near the apiary. The fountain, as invented by "A Renfrewshire Bee-keeper," is pretty and interesting, as well as ornamental in any garden, but any vessel filled with moss or sawdust, then filled with water, serves the purpose well, water oozing out of a barrel or dripping from the rocks are favourite resorts for the bees to collect from. At the eighth line "storm" should be substituted for "swarm." "Particularly during summer," is decidedly what I meant, but will perhaps convey my meaning better and make it easier understood if I add now, that the fewer manipulations throughout the year at any time the better it will be for both bees and bee-keeper. Avoid all uncalled-for and unnecessary manipulations during summer, particularly those unnatural ones, such as interfering with the body of the hive when supers are being filled, or that even more objectionable one of spreading the brood. There is a time and a place for everything, and for a bee hive as well as other things. All that we can do to help them and our objects is to assist nature, not to thwart it.

Peameal placed upon a tray and covered with a sheet of glass a little above the meal, and placed in a sheltered and sunny nook answers the purpose well, but mice steal it when thus exposed.—LANARKSHIRE BEE-KEEPER.

THE NATIONAL BRITISH BEE-KEEPERS' UNION.

"A LANARKSHIRE BEE-KEEPER," page 221, makes a few remarks on the above which I will endeavour to answer. First, I trust he will not refrain from criticising this scheme if he can see anything to find fault with. It is hoped to make it perfect, and how is this to be attained if people refrain from pointing out its faults? Your correspondent says he does not see anything in the articles for the disposal of accumulated funds. Just so. As the management will be in the hands of a strictly representative Council, elected annually, the disposal of all or any funds will practically rest with the majority of the members. Article 12 will give full powers on this point, and as the Union will be enrolled under the Friendly Societies Acts, every penny of the funds will be protected from misapplication. The Union is designed to keep clear of all trade interests, or interfering with such interests, but at the same time reservation is taken for power to help members to find a market for their produce. Article 2, section H, is clear on this point. The Union is to make bee-keepers independent of middlemen, and by providing a registered label, and taking steps that it shall not be used fraudulently, raising the value of British honey fully 3d. per lb., besides bringing the producer and consumer directly together, and avoiding such "specs" as the Honey

Company, I think the Union will be of more value in Scotland than England.

Regarding having a sort of insurance fund to make good losses or start poor persons in bee-keeping, I think this is entirely out of the sphere of the Union and more in the way of the various bee-keepers' associations. These associations are purposely founded to encourage bee-keeping, and surely they are trying by all means in their power to induce everyone to keep bees. Very many members of these associations, particularly the ornamental ones, do not keep bees, while many others are interested in the increase of bee-keepers for the purpose of selling them supplies. Now when they have persuaded a person to keep bees, and he has got some, he is eligible for membership in the Union. We shall then tell him what kind of hives he will find most profitable, and the best way to produce and market his honey. We shall in this way counteract the influence of the supply dealers, &c.

The Union is to protect the interests of real *bonâ fide* bee-keepers, while the various associations will be trying to increase the numbers; the work of both can never be combined into one to be satisfactory, it being against the interest of a bee-keeper for another to enter his field, collect his honey, and then compete with him in its sale. There is plenty of work for the associations for many years to come; but as soon as British apiculture is developed to such an extent that importing foreign honey into this country would be like importing coals at Newcastle, the various county bee-keepers' associations will cease to exist, while the N.B.B.K.U. will go on in all its vigour. The last paragraph, in my opinion, contains a very valuable suggestion, which I shall not fail to bring under the notice of the Executive at the proper time.—JOHN HEWITT, *Sheffield, Hon. Sec. to the Promoters.*

HOW CLOSE IS THE CONNECTION?

"E. M. B. A." (page 222) says it is utterly incorrect that the British Honey Company, the British Bee-keepers' Association, and the *British Bee Journal* are closely connected. He says, further, the *Bee Journal* is the organ of the British Bee-keepers' Association, but the management is quite distinct, but he fails to give the least proof in support of his case. If it is as he says that the management of the three concerns "is quite distinct," how comes it that one man is the manager or secretary for all three?

If all are really distinct, how comes it also that Mr. Blow, a hive maker, member of the British Bee-keepers' Association, and one of the directors of the Honey Company, is in possession of the list of subscribers to the *Bee Journal* for the purpose of sending them his trade circulars? If he is no exception, will Mr. Huckle give the same privileges to anyone else? If there is no connection, why do they not explain instead of trying to throw up "dust" to hide the real facts?—A HALLAMSHIRE BEE-KEEPER.

TRADE CATALOGUES RECEIVED.

Hogg & Wood, Coldstream and Duns, N.B.—*List of Agricultural Seeds, 1885.*

John Laing & Co., Forest Hill, S.E.—*Special List of Chrysanthemums.*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Strawberries Failing (J. M.).—We cannot exactly tell you the reason why the flowers have "gone blind," but we know that digging plants from the open ground, and at once placing them in a temperature of 50° so early in the season, is not good practice. Plants for forcing should be prepared in the manner practised by the best gardeners, and which has often been described, and a temperature of 45° is quite sufficient to start with. Still, the flowers of well-prepared plants occasionally fail to set if the weather is dull, the atmosphere damp, and the temperature high, as under these circumstances the pollen, if not deficient, as it often is, is imperfectly distributed.

Dioscorea Battatas (J. C.).—This, the Chinese Yam, is, we presume, the kind to which you refer. We have grown it successfully in a sheltered

garden in a southern county, and produced an abundant supply of tubers, but they were not enjoyed by many palates. The tubers were started in pots in a light moderately heated pit, much after the manner of starting Dahlias, and the Yams when established and growing freely were planted in a trench in which decayed vegetable matter, such as leaf soil, with which a little wood ashes were incorporated. Stakes were placed for the plants, up which they found their way after the manner of Convolvulus. Fine weather in June was chosen for planting, the tubers being placed in pots towards the end of April or early in May. Medium-sized whole tubers were chosen for planting, but the larger tubers no doubt might have been cut and planted in portions; we, however, did not try them, as we had always plenty of whole tubers. We consider tubers such as yours, 6 inches long and proportionately thick, quite large enough for planting.

Plants for Covering Ground under Trees (An Old Subscriber).—There is nothing better than the common or English Ivy (*Hedera Helix*), or Irish (*Hedera canariensis*), both of which grow quickly and soon form an acceptable green clothing. It is best to break up the ground before planting, thoroughly clearing it of weeds, and to insure its covering the ground soon put in strong plants at about a yard apart every way, and train the shoots every way, pegging them to keep them in position. They will root into the soil as they grow, and if watered during dry weather they will grow more freely. Periwinkle is also good for the purpose, the plants being put in about about a foot apart. The Lesser Periwinkle is best—viz., *Vinca minor*. Both the Ivy and Periwinkle do well in the environs of smoky towns; indeed, they succeed admirably in town gardens, and deserve to be more frequently seen in them than they are at present.

Top-dressing Lawn (Idem).—Any of the artificial manures will answer, but we find nothing better than soot, wood ashes, and lime, applied at the rate of half a peck per rod (33½ square yards), taking equal proportions of each and thoroughly mixing. It should be applied before in preference to after rain, as it is then certain to be washed in, and is best applied in spring before mowing commences, we using it from February to April as the weather is favourable. In town gardens, however, soot may be dispensed with, as plenty of this is deposited, and bonemeal may be substituted with advantage under such circumstances.

Improving a Conservatory (M. C. B., Hants).—If you do not mind expense it would be best to have the lights constructed of pitch pine or teak, both of which are very strong and durable, and though more costly at first, are cheapest in the end. The most suitable system of glazing for your purpose would be to employ putty, or better, white lead for bedding the glass, and secure the panes with copper tacks, using no top putty, but removing that which squeezes above the glass in pressing the squares in position. This, in more ways than one, is preferable to using top putty, the chief being its freedom from cracking and peeling off. The best time to renew the roof and front lights would be in August, or from then to the middle of September, so as to have it painted and hardened before wet weather sets in. It may, however, be done from June to September inclusive, the early part of the latter preferably, as least liable to interfere with the climbers.

Tank Heating (Twenty-five-years Subscriber).—The tank system of heating, as described at page 688 of Johnson's "Cottage Gardeners' Dictionary," is a very desirable mode of affording bottom heat, especially for propagating purposes. There is no fear of the water not working all right in the tank providing you adhere to the instructions given. We have one in a house, a tank formed with brick side walls and bottom cemented, and it answers admirably, but have four rows of 4-inch hot-water pipes in it, which are kept just covered by the water in the tank. The covering of the tank should be just clear of the water and then the plunging material. If you follow the plan referred to you will need to have partitions in the tank, so as to cause the water to circulate, adhering to the instructions given. It is an admirable method of affording bottom heat, and too little employed, probably for want of being more known.

Herbs (A Lady Gardener).—You may cut the Sage and Thyme down, but if cut closely you will have to wait a considerable time before you produce for use. We should take up some of the plants, divide and plant so that the growths are only an inch or two above the ground, then when these plants are established those that have not been disturbed may be destroyed if not wanted. April is a good time for dividing and planting herbs.

Red Spider on Vines (Idem).—It is far better to prevent the establishment of red spider than to permit it to increase and then resort to measures for its destruction. By maintaining a moist yet buoyant atmosphere and giving the Vines a heavy syringing at weekly or fortnightly intervals as may be needed the pest can usually be kept outside the house. Many persons sprinkle their vineries with guano water at the time of closing, as they find the ammonia beneficial to the Vines and distasteful to their enemy; but they do not use it until the Grapes have stoned, and are particular in leaving the top ventilators slightly open all night, admitting more air very early in the morning. If you are driven to use sulphur, however, mix it at the rate of a tablespoonful to a gallon of water, stirring constantly during its application. We have been growing Grapes for thirty years and never had occasion to apply sulphur to the foliage for destroying red spider.

Culture of the Cape Gooseberry (Craven).—*Physalis edulis* can be grown in either a stove, an intermediate house, or a greenhouse, but the second named is preferable, and in some gardens we have seen it grown very successfully against the back wall of a vinery. In a warm house it is evergreen, but in a greenhouse the leaves fall in the winter. The flowers are produced during the early summer months, and the fruits are ripe from July to September or later. When constantly growing, fruits are obtainable nearly all the year round. A compost of turfy loam and leaf soil, with a little well-decayed manure, suit the plant admirably. With ordinary care the plants will live several years.

Destroying Weeds (Inquirer).—Half a pint of sulphuric acid mixed in a gallon of water and immediately poured upon the path will destroy all small weeds. A waterpot with a fine rose answers best for the work. Care must be taken not to let the acid touch the clothes or it will burn holes in them, and it will also kill Box edgings. Apply it in fine weather, and you will have no more weeds for several months. The acid can be had from any chemist or oil and colour dealer.

Arranging Plants in Flower Bed (Merchant).—You do not say whether you wish to use the whole of the plants or only those that would afford the most pleasing effect; but we think the latter is the intention, therefore we propose—1, Mrs. Pollock Pelargonium; 2, blue Lobelia; 3 and 6, Flower of Spring Pelargonium; 7, 8, 9, and 10, Golden Feather Pyrethrum; 4 and 5, Happy Thought Pelargonium; then a line all round the bed so as to strike all the points of 2 and the outer edges of the circles 3, 4, 5, and 6 of Santolina incana; then a line of blue Lobelia and an outer edging or margin of Cerastium tomentosum. The Echeverias may be dotted in the Lobelia, or in 2 at about 1 foot distance apart. We presume what you call French Lavender is Santolina incana.

Insects in Soil (C. I. R., Bridport).—The slender, worm-like insects are Myriapods, so named from their many feet. The particular species seems to be Julus pulchellus, which often infests the roots of plants, occasionally devouring or damaging seeds, such as those of Peas and Beans. It has been argued, however, that they seldom attack any plant which is not already beginning to grow sickly or to decay. They may be killed by a dressing of quicklime and soot, or by watering with the solution of soft-soap and petroleum which has been frequently recommended in these pages. Large numbers may also be trapped by slices of Potato placed in the ground at night. The caterpillar enclosed is that of the yellow underwing moth (Tryphena pronuba) which feeds through the winter on the roots and stems of plants, doing some seasons a good deal of harm amongst vegetables, upon which it feeds rather promiscuously.

Lapageria Unhealthy (M. C. B.).—Judging by the leaf sent, the house in which the plant is grown is not judiciously ventilated. We suspect it is often kept closed too long in the morning, then the lights are thrown open widely. This results in excessive evaporation from the leaves, which are thereby chilled, imparting to the leaves a scorched appearance. Lapagerias require a free ventilation at all times, a close atmosphere being very injurious. Are you sure the roots of the plant are working in suitable soil?

Vine Leaves Blistered (C. H. H.).—We do not like the appearance of your Vine leaves, but there is not sufficient evidence of the presence of the phylloxera. We rather attribute the condition of the leaves to the presence of excessive moisture, followed by sudden evaporation, resulting from keeping the house closed too long, then throwing open the ventilators somewhat widely at once. You do not say whether the Vines grow freely or not, nor give a hint as to the state of the borders and condition of the roots. If you like to send further particulars and specimens the matter shall have our close attention.

Double Richardias (J. B. G.).—Flowers with double spathes are by no means common, yet from some unexplainable cause appear to be rather frequent this year. We have had two examples similar to yours sent to us, and so far as we know they represent either a "freak of Nature," or are the result of a maturation of the growths during an unusually fine summer and autumn, coupled with high cultivation this spring. We are not aware that the plants will necessarily produce double-spathed flowers another year, but they will no doubt be watched with interest by cultivators.

Culture of Zygopetalum Mackayi (J. W. Leigh).—An experienced cultivator contributes the following note on the culture of this useful Orchid:—"The secret of growing this old Orchid well is to give it heat and moisture during the season of activity and complete rest while in flower. The conditions of the conservatory or any similar structure will suit it exactly where a temperature not higher than 45° to 50° is maintained. This plant will continue growth slowly under ordinary stove treatment where the night temperature ranges from 60° to 65°, according to the weather. To ensure complete rest in such an atmosphere the plant must be dried severely at its roots, and even then the season of rest received under such conditions is not really beneficial to the health of the plants. The large pseudo-bulbs and thick fleshy roots enable it to withstand drought for a very long time, but complete rest, so essential to luxuriant growth, is better brought about by subjecting the plant to a lower temperature. Little or no water at the roots will be needed while the plant is allowed to remain in the temperature advised. Not only is this Zygopetalum generally benefited by a lower temperature, but the flowers if allowed to expand under cool conditions are larger in size, brighter in colour, and they last nearly twice the length of time. This Orchid does well in a pot or pan in a mixture of peat fibre, lumps of charcoal, or broken crocks, or both, or a little sphagnum moss. During the season of activity, if the pot are well crammed with roots, weak stimulants occasionally assist the plants wonderfully." The plants may be potted in the present or next months and they may be divided if you wish, as they will probably produce "back growth." The Orchid sent is Oncidium Cavendishianum.

Primulas for Winter (Sandback).—A heated frame or pit for raising and establishing the plants in the spring, cold frames for growing them in during the summer—say, from the middle of June till the middle or end of September, and a house with a minimum temperature of 45° afterwards, are requisite structural conveniences. A vinery will do very well after the Vines are pruned if kept at the temperature indicated. Sow in April in pots of sifted leaf soil, decayed manure, and loam in equal parts, and not pressed down firmly, watering before sowing the seed, not covering with soil, but placing a piece of slate or something across the pot to prevent the escape of moisture from the soil. The seed germinates freely in a temperature of 60°, and light is then essential, yet the seedlings are best shaded from bright sun. When they can be handled prick them off an inch or more apart in boxes, keeping them rather close, moist, and shaded till established, then allow them more light and air. When the plants touch each other place them separately in small pots, reducing the leaf soil and increasing the loam. When established in these pots let the plants have plenty of air to keep them sturdy, but not a dry atmosphere nor a hot sunny position. On roots protruding through the drainage shift the plants into 5-inch or 6-inch pots in a mixture of turfy loam not sifted, a sixth of decayed manure worked through a sieve, with a little crushed charcoal and sand to keep the mass porous, 1 oz. of bonemeal to 1 lb. of soil being a valuable addition. Drain the pots effectively, pot rather firmly and deeply, and arrange the plants on ashes in frames. Apply water carefully, and shade lightly from hot sun, drawing off the lights on the evenings of hot

days in July and August, and leaving them off all night in settled weather, as the dews invigorate the plants. These are what you request—the "outlines of culture," but success depends on the constant attention of the cultivator in watering the plants judiciously, and providing a genial atmosphere for encouraging their growth. They must not be root-bound in the small pots before being shifted, and not until the larger are pretty well filled with roots is liquid manure required; after then it may be given weak, clear, and often with great advantage.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (E. B.).—It is impossible to recognise your plant by two dried and imperfect leaves, but if you send a specimen when it is in flower we may be able to determine it for you. Judging by the leaves we received the plant is not in a very healthy condition, perhaps the pot is not sufficiently drained, or the soil may be unsuitable. (J. C., Durham).—The specimens sent were very small and unrecognisable. Correspondents who desire their plants correctly named should take care to send good examples. As near as we can tell, the one with flattened branches and racemes of flowers resembles Genista sagittalis, the other appears to be Medicago lupulina.

COVENT GARDEN MARKET.—MARCH 25TH.

TRADE quiet, with good supplies. Grapes falling off; prices improving.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples	½ sieve	2 6 to 4 6	Oranges	100	4 0 to 7 0
Chestnuts	bushel	16 0 0 0	Peaches	per doz.	0 0 0 0
Cobs, Kent ..	per 100 lbs.	55 0 0 0	Pears, kitchen ..	dozen	1 0 3 0
Currants, Red ..	½ sieve	0 0 0 0	„ dessert	dozen	2 0 6 0
„ Black	½ sieve	0 0 0 0	Pine Apples English ..	lb.	1 6 2 0
Figs	dozen	0 0 0 0	Plums	½ sieve	0 0 0 0
Grapes	lb.	5 0 8 0	Strawberries	lb.	10 0 12 6
Lemons	case	10 0 15 0	St. Michael Pines ..	each	3 0 7 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes	dozen	2 0 to 4 0	Lettuce	dozen	1 0 to 1 6
Asparagus	bundle	7 0 8 0	Mushrooms	punnet	0 0 1 6
Beans, Kidney ..	100	1 0 1 6	Mustard and Cress ..	punnet	0 2 0 4
Beet, Red	dozen	1 0 2 0	Onions	bunch	0 3 0 0
Broccoli	bundle	0 9 1 0	Parsley	dozen bunches	2 0 3 0
Brussels Sprouts ..	½ sieve	2 6 3 0	Parsnips	dozen	1 0 2 0
Cabbage	dozen	0 0 1 0	Potatoes	cwt.	4 0 5 0
Capsicums	100	1 6 2 0	„ Kidney	cwt.	4 0 5 0
Carrots	bunch	0 3 0 4	Rhubarb	bundle	0 4 0 0
Cauliflowers	dozen	2 0 3 0	Salsafy	bundle	1 0 0 0
Celery	bundle	1 6 2 0	Scorzoneria	bundle	1 6 0 0
Coleworts	doz. bunches	2 0 4 0	Seakale	per basket	1 0 1 0
Cucumbers	each	0 6 1 0	Shallots	lb.	0 3 0 0
Endive	dozen	1 0 2 0	Spinach	bushel	2 0 4 0
Herbs	bunch	0 2 0 0	Tomatoes	lb.	0 0 0 0
Leeks	bunch	0 3 0 4	Turnips	bunch	0 4 0 0



ALTERNATE HUSBANDRY.

No greater boon can the farmer have at this season of the year than high reading of the barometer steadily maintained for days and weeks together, with the usual results of high wind from the north-east, bright sunny skies, clouds of dust upon the highways, and, best of all, soil in the best possible condition for sowing the Lent corn. So well and early has this been done, that as April is now close upon us we shall, in many instances, be able to sow the grass and Clover seeds used under the important system known as alternate husbandry in the first rather than the second or third week of that month, as is usually done. The corn should always have two or three weeks' start in order that the seeds may continue dwarf till after harvest, for if sown together the grass springs up among the corn to such a height that it must be cut with it, and then the corn not only must be mown and left in the swath, but it not unfrequently has to be turned before it is dry enough to be carried to the rickyard.

Where land is being laid down to permanent pasture, a certain proportion of it should be held in reserve for the cultivation of tall quick-growing grasses and Clovers to afford an ample supply both of green food and hay for the cattle, so that they may be kept away from the young growth of permanent pastures for the first two or three years. This is a matter of considerable importance, which we have reason to fear does not receive the attention it should do, simply because due thought is not given to the best way of treating our young permanent pastures for

the first two or three years till we have a well-knit sward. To many, very many, farmers the laying down of land to grass is a new departure in farming, and there has naturally been much blundering and a loss both of time and money, and yet the right way of doing it a simple one. It goes without saying that the land must be drained, cleared of weeds, and worked to a fine seed bed; yet if to this we add pure seed sown at the right season of the year, we shall have about exhausted anything like a systematic arrangement in due sequence of details of practice in force generally. It is not only in the subsequent management of the young permanent pasture that serious mistakes are made, but also in the reckless thoughtless manner in which the work is undertaken. We want more of measure, balance, proportion, and end and purpose in our work, and a clear intelligent grasp of the best means of rendering it successful. For a time permanent pasture and alternate husbandry go hand in hand; we have, therefore, to consider what quantity of hay and the area of grazing land we require for the cattle. Seeds, consisting of the usual mixture of Rye Grass, Cocksfoot, white Clover, red Clover, Alsike, and Cow Grass, on highly cultivated fertile soil, will produce 3 tons per acre in the two principal growths of the year, known as the first and second "cuts," and we have known instances where first cut has closely approached that weight. We may usefully quote an instance of this. In the Royal Agricultural Society's report of the farm prize competition last year we are told that on the first-prize farm "The young seeds after Barley were top-dressed in the autumn with well-rotted farmyard manure, followed in December by a mixture of equal parts of bonemeal and superphosphate at the rate of 5 cwt. per acre, at a cost of 25s. Grazed with ewe hoggs up to Christmas, rested till the beginning of March, then feed by ewes and lambs up to the beginning of May, and with a little rain there was the certainty of an abundant crop by the middle of July; indeed, given clean land, as this is, and a good plant, it would be a matter of surprise if such treatment did not produce great results. On our last visit, July 10th, these seeds were still growing, the Rye Grass was just coming into flower, and the Clover was partly in flower. One of the Judges, viewing the field from a distance, not unnaturally remarked that it was a splendid crop of Barley. We never remember to have seen any crop of such bulk, which we estimated at from 2½ to 3 tons per acre." It should be added that Italian Rye Grass at the rate of half a bushel of seed per acre was the only Grass used with the mixture of Clovers.

In a careful trial of Grasses last year the weight of both *Alopecurus pratensis* (Foxtail) and *Dactylis glomerata* (Cocksfoot) was superior to *Lolium perenne* (Perennial Rye Grass), and in another instance both *Phleum pratense* (Timothy) and *Festuca pratensis* (Meadow Fescue) were superior to it. Cocksfoot, Timothy, and Italian Rye Grass may all three be added advantageously to the Clovers for a one year's ley; and for a two or three years' ley we would use all three of them, with Meadow Fescue and Crested Dog's Tail. We cannot be too particular in procuring the seeds from a reliable source. It is well known how much Grass seeds are adulterated with the seed of Rye Grass. Professor Carruthers wisely observes that whatever opinion may be entertained of the value of this Grass in pastures, it is obviously undesirable to buy Rye Grass as Meadow Fescue, and pay at least three times its own market price for it; and when one considers the low germination, and the large amount of Rye Grass present in so many samples, it is manifest that the plants of Meadow Fescue that actually grow in many pastures must cost a very considerable sum of money.

WORK ON THE HOME FARM.

Live Stock.—By the time this note is printed our Rye, which is now upwards of a foot in height, will be in cut for the dairy cows, to which animals its use will be confined for the present in order to promote richness of both colour and flavour in cream and butter. Heartily glad are we of this early supply of green fodder, for we must own to having had complaints both of poverty of colour in the butter and of its having occasionally been decidedly unpleasant to the taste. Such complaints usually occur in the first month of the year, when the yield of milk is low. We try always to have some cows to calve at intervals throughout winter, but are not always successful in what is really an important matter for the requirements of a large household. Mention is made of this now in view of striving to continue to provide fresh cows for next winter, the period of gestation being about forty weeks. A strong forward growth of Italian Rye Grass gives fair promise of a crop of considerable bulk, which will be at hand for the cows when the Rye is used. The forward condition of this piece of seeds is almost solely attributable to the dressing of artificial manure applied to it in February, when we had so much rain. The manure was dissolved and washed down to the roots so quickly that a quick strong growth followed sooner than I had hitherto seen it, and results of the most satisfactory character are already before us. The value of such a crop at this season of the year is literally beyond price, for

not only does it enable us to keep the dairy cows fully supplied with green food, but all the other cattle have some too; and we can well afford to keep the whole of them in the yards till the pastures "have got a good head," so that when we do turn out they may obtain plenty of food without having to ramble far and wide for it.

There is a lesson in practice here that we wish to enforce strongly. To have an early supply of green fodder it must be grown in rich soil, or rather we would say in soil charged with sufficient nutriment to ensure a full crop. We are advisedly cautious in writing of good or bad soil, because we desire our readers always to regard the soil as a medium for conveying food to plants, and to remember that no soil contains an inexhaustible store of fertility. High culture given to land for special crops is certainly no mean factor in successful farming; and now, when every stroke must tell home, it grows yearly in importance. Without it we should have had no early cut of Rye or Italian Rye Grass, yet it is most obvious to a close observer that special treatment of the land for a special object has by far too little attention from farmers generally. On the day this is written we have driven past several farms, and to our regret we saw many cows turned out upon the pastures prematurely—pasture, too, that was the reverse of forward in growth. Well might one exclaim, What a pity! for there was not enough green food to satisfy hunger, or to be of any material benefit to the cows.

GOOD AND BAD FODDER GRASSES AT KEW—THE RYE GRASSES.—I see in your Notes and Gleanings, page 231, a correspondent draws attention to what seems a new departure at Kew in setting apart two large borders for an agricultural experiment ground, divided into plots, each plot containing one good or one bad Grass that those interested were to grow or avoid. This is very commendable, and remembering the vastness of the agricultural interest, it is astonishing that the Government has not long since set apart a special garden or farm where those concerned every time they come to the metropolis could go and see good, bad, and indifferent varieties of not merely Grasses, but every crop grown usually by farmers. At present, if they wanted to see anything of this kind they should go to the seed farms of some of the great seed firms. However, what I want to direct attention to is the more than questionable accuracy of bracketing *Lolium italicum* and *L. perenne*, Italian and Perennial Rye Grasses, with the ten other bad Grasses. I am aware that Mr. Faunce De Laune does not include either of those Grasses in his permanent pasture mixtures, and that they have been described as merely annual Grasses, shallow rooting, &c. However, I am also aware that when I was a pupil at the Government Farming Institute at Glasnevin, by the free use of artificial manures and liquid from the hydrants, we cut upwards of 60 tons of soiling of Italian Rye Grass per acre for the milch cows. I should be very curious to know what other Grass would give the same produce and be equally acceptable to cattle for fodder. It is misleading the public, therefore, to class either of those among the bad fodder Grasses. In this town, not later than last market day, Rye Grass hay readily brought 6d. per cwt. more than any other. I shall be sowing several acres under permanent pasture within the next few days, and as I want a good meadow next year I mean to include both Italian and Perennial Rye Grasses in the mixture.—W. J. MURPHY, *Clonmel*.

OUR LETTER BOX.

Large Duck Egg (Delta).—An egg 6½ ozs. in weight is very unusual even for a Duck. We do not remember to have seen one so large. Was it double yolked?

Feeding Bees (H. T. B.).—If bees are short of food and cannot obtain it outdoors, feed them at once, giving as much as they will take, and continue the practice as long as may be necessary.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.				IN THE DAY.				Rain	
	Barometer at 32° and Sea Level.	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.		On grass.
1885.										
March.										
	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
Sunday	30.259	35.2	33.0	E.	40.0	53.4	27.8	70.2	21.5	—
Monday	30.478	37.5	35.4	W.	39.2	53.2	29.8	89.4	23.4	—
Tuesday	30.177	41.1	37.7	S.W.	39.4	54.8	33.6	90.3	27.2	0.037
Wednesday ..	29.621	41.4	38.9	W.	40.2	52.1	37.8	90.9	32.5	—
Thursday	30.096	36.3	32.9	N.	40.4	45.9	31.8	91.3	27.9	—
Friday	29.822	42.9	41.6	S.W.	39.8	52.6	33.2	105.9	23.2	—
Saturday	29.892	43.2	38.8	N.W.	41.4	53.6	39.3	83.2	32.8	0.740
	30.049	39.7	36.9		40.1	53.7	33.3	88.6	27.6	0.777

REMARKS.

15th.—Slight fog 8 to 9.30 A.M. and 4 to 6 P.M., otherwise fine and sunny. Dense fog at west end of London.
 16th.—Fine and generally bright.
 17th.—Beautiful day, rather windy; rain at night.
 18th.—Fine bright morning; slight shower of hail at noon.
 19th.—Bright and sunny, but cool.
 20th.—Fine, and in afternoon much warmer.
 21st.—Cloudy morning, with flakes of snow during afternoon; slight rain 10 P.M.
 A fine week, with large daily range of temperature, averaging more than 20°, and on the 20th amounting to nearly 30° (29.6°). Sun's temperature 10° higher than last week, and 20° higher than the week before, while grass frosts have occurred almost nightly.—G. J. SYMONS.
 P.S.—The entry of 0.740 in. of rain placed against Saturday fell partly as rain and partly as snow in the early hours of Sunday.



COMING EVENTS

2	TH	Linnean Society at 8 P.M.
3	F	GOOD FRIDAY.
4	S	
5	SUN	EASTER SUNDAY.
6	M	BANK HOLIDAY.
7	TU	
8	W	

ON POTTING PLANTS.

AMONG the first-learnt operations in plant cultivation crocking pots and potting plants are to a young beginner two of the most important. As garden boys we were first taught how a pot intended to contain a plant should be drained, and in due time we were allowed to take our place at the potting bench, when in our own opinion we were fully fledged gardeners. To a man whose apprenticeship was spent under a good and careful master, by whom all that it was important for the beginner to know with regard to potting and such elementary work was carefully explained at the outset, a chapter on such a subject will be of little value, and he may justly remark on seeing this that he and all properly trained gardeners have learned long ago all there is to know about potting. But, unfortunately, there are not a few men who from one cause or another have not been properly grounded in the operation of potting, and that it is so every gardener finds out often to his cost. Recently at a meeting of a gardeners' society, of which the writer is a member, the chapter in Lindley's "Theory of Horticulture," which treats on potting, was read and discussed; and although everyone seemed to think he knew how to pot a plant properly, much was said that showed how some at least did not rightly comprehend the operation, whilst one or two supported views which if acted upon could not but result in disastrous consequences. This, therefore, is the excuse for writing a chapter upon the subject.

Some useful advice was given by Mr. Muir at page 232 on how to drain flower pots; but one or two flaws occur in what he has said—notably where he suggests that an inverted pot should be placed over the hole in the bottom of large pots. Now we all know that the first object to be attained by drainage is a free and constant outlet for the water from the soil above, and thus it is that where crocks only are used we are always careful to place over the hole at the bottom of the pot a large one with the concave side downwards. But a small even-rimmed pot placed over the hole is practically the same as placing a flat crock or a piece of glass over it. This will be apparent to anyone who observes how closely the rim of a small pot when inverted over a flat surface will touch all round. By breaking a few niches in the rim of the small pot to be used as drainage the danger of blocking the hole of the pot drained is obviated. In Lindley's book an excellent plan is mentioned for preventing worms, &c., getting into the pot through the hole at the bottom when placed upon the ground. He says, "To remedy this I put at the bottom a piece of perforated zinc so as to completely cover the hole. Upon this a large crock is placed with the convex side upwards." For large plants which are stood out of doors during a portion of the year this zinc trap seems an excellent suggestion.

The depth of drainage used always varies with the requirements of the plant—Orchids and a few other plants, generally epiphytal ones, requiring a larger amount of drain-

age than others. Bearing in mind that for plants which are intended to remain in the same pot for several years the more drainage used the less soil room there is, it will be seen that a thin layer of crocks if properly placed will be better than a thick one. The roots of a plant when growing in a pot very soon reach the bottom, where they generally continue growing round, and seldom—with strong-rooted plants never—find their way back into the soil again. Where a thick layer of crocks is used it will be seen that the majority of the feeding roots have no food supplied them other than that contained in the water when passing through the soil and crocks. Where crushed bones are used as drainage the case is different, as the bones afford more nourishment to the roots than ordinary soil would. If a shallow layer of soil is preferred it is always advantageous to use shallow pots or pans instead of having a deep layer of drainage beneath the soil, which has the effect of allowing the water to escape from the soil quicker than is good for the plant. So long as stagnation is prevented it is better for all terrestrial plants that they be so situated as to have the soil about their roots kept moist without too frequent waterings, the effect of which is to completely decompose the soil or make it sour. For plants in very warm houses this precaution is of special importance.

Shifting plants into pots of larger size is an operation requiring some knowledge of the nature of the plants, and also depends not a little on the health and size of each. Considering first those plants which are slow growers, and therefore do not extend their roots very far in a year, such as Ericas, Epacrises, Pimeleas, and other hardwooded plants, the question arises, Is it better to treat these plants on the one-shift system, as recommended by Dr. Lindley, or to give them repeated shifts, such as would be no more than the roots would take complete possession of in a year? If it is admitted that soil deteriorates rapidly when frequently watered or when placed in heat, it must be apparent that to place a plant in a large body of soil which could not be occupied by the roots for several years is a system not to be recommended. There can be no question of the many advantages of the repeated or gradually increasing shift over that of the one-shift system—that is for plants which are being grown from small into large specimens, and which are slow growers. Many plants—such, for instance, as Pelargoniums, Balsams, Fuchsias, &c.—will under favourable treatment grow to a very large size in a single season. Some of the softwooded quick-growing Heaths also considerably increase in size in a year: for all such plants a much larger pot is advantageous. But we must remember that with very few exceptions the plants we grow are wanted to flower every year. Now, it is a well-known fact that under ordinary conditions a plant in a pot of proper size—*i.e.*, such as its roots would about fill in a year—flowers more freely than when planted out, or when grown in a larger pot than is required for one season's growth. The pot cramps the roots, causes the wood to mature quickly, and so induces the plant to flower. We know that the smaller the pot under ordinary conditions the greater the disposition to flower, so that by placing our plants in pots containing only enough soil to afford them the conditions required for the growth and maturation of the wood formed in one season, we are ensured a supply of flowers which would probably otherwise have failed us. From this it will be seen that the safest and best system to adopt with regard to repotting and shifting is the annual and not the one-shift system, or, in other words, the placing of the plant at an early stage of its growth in a pot large enough to contain it for the following six or eight years.

Shifting plants is a different operation from that of shaking out and repotting, which is practised only for such plants as are deciduous or require a long season of complete rest. This operation is usually performed after the plants have been rested, cut back, or pruned, and started into growth again. As soon as the buds begin to show signs of activity is the time to shake out from the roots of the plants

all the old soil and prune the roots somewhat, afterwards placing them in pots of a size only large enough to afford them support for a few weeks. Whatever may be said to the contrary, there can be no question as to the wisdom of this method as compared with that sometimes recommended, and which is to repot the plants during their rest and not before growth has recommenced. A little consideration of one of the simplest laws of plant physiology is sufficient to condemn the latter practice. (It must be borne in mind that we are now discussing plants cultivated in pots, which afford conditions very different from those to which plants growing naturally are exposed.)

The firmness of the soil is another point of some importance to the cultivator of plants in pots. Some growers, successful ones too, pot the softest wooded and quickest growing plants much firmer than many would advise. Some of the best Pelargoniums I have ever seen were grown in a stiff loam pressed down as hard as a brick. These plants were in rather small pots, but it was a revelation to one who had been taught to pot hardwooded plants very firmly and softwooded plants loosely. A prize Mignonette grower used to say his success was due to hard potting and bones, and his plants were in soil as hard almost as stone. They were bush and standard Mignonettes, such as we seldom see now. In this matter, however, much depends on the quality of the soil and the aim of the cultivator; still, the following general rules may be pointed to—viz., all fine-rooted plants may be potted firmly (always excepting annuals), very fine-rooted plants with hard wood requiring the soil to be rammed hard. The harder the soil is pressed about the roots the more sand or its equivalent should be mixed with the soil. For the production of flowers firm potting is an important factor; for foliage and quick growth loose potting is best.

In conclusion, a word of warning may be uttered against filling the pots too full of soil, so that insufficient room is left for watering. The more soil a pot contains the more water will be required to thoroughly moisten it when dry. This seems plain enough, but, as was said by one of those who took part in the discussion above referred to, "All these simple matters are plain enough, but many gardeners fail to see the importance of observing them. We all know how to pot a plant perhaps, but we do not all pot it properly."—W. N.

THE DUKE OF BUCCLEUCH GRAPE.

No man is better entitled to a hearing on any subject relating to fruit culture than my friend Mr. J. McIndoe, at the same time I feel it due to myself to correct a wrong impression his article on this Grape in the Journal for last week is likely to convey. He writes—"When Mr. Thomson decided upon sending out the Duke I think he made a mistake in recommending it as an early variety that would come in two or three weeks before the Black Hamburgh." What I did say—I quote from the circular I sent out—is this: "In the same house with the Black Hamburgh it ripens three weeks before that variety." This is exactly our experience of the Grape here, as anyone can discover who will call about the first week in August. If Mr. McIndoe construed my language so as to understand that I recommended it as an early-forcing Grape equal to the Hamburgh in this respect, I am very sorry. This was not my intention; I merely related facts as I found them.

Mr. McIndoe condemns a method which I, and others, have recommended for stopping the splitting or cracking of Grapes, maintaining that the ascent of the sap from the roots to the foliage and fruit has nothing to do with splitting, and characterises such an idea as "nonsense." He writes:—"I have never seen an argument advanced to prove the theory that the civil originates with the roots." I will now supply him with one which many of your readers will consider a very old one, I expect. The sap, as no doubt Mr. McIndoe will admit, passes from the earth through the small tubes in the roots, and flows through similar tubes in the most recently formed wood of the stem till it reaches the foliage. There it undergoes well-understood changes and descends, building up the general system of the plant, and, especially in the case of the Vine and other fruit-bearing plants, depositing certain constituents in the fruit. The volume of these constituents will be greater or less just as the quality of sap sent up by the roots is more or less, all other things being equal. Certain plants that are vigorous rooters and growers are more likely

than those less so to send up a larger quantity of sap. This I have found a special characteristic of the Duke. When the growth of the Vine is allowed to extend in foliage and branch much of this great flow of sap is so appropriated; when not so appropriated the attractive power of the fruit secures a greater share than its skin can hold, and it splits. Common sense suggests that the remedy lies in intercepting the sap on its way to the fruit, and ample experience has proved that here common sense is and has been a safe guide, as it is in many other matters.

Mr. McIndoe tells us that he concludes that excess of sap is not the cause of cracking in the case of the berries of Grapes, "because the sap does not leak out through the apertures." He further tells us that cracking is caused by the damping of the paths. "This soon penetrates through the porous skin of the berries, causes an expansion of the juice of the tissues of the flesh, and the skin, not being elastic, soon gives way; hence the cracking." This excess of juice does not seem to leak out through the apertures any more than the ordinary sap; consequently the non-leakage of the sap as evidence may be turned out of court, and it is not "quite clear that cracking is not caused by sap flowing from the roots." According to my experience a certain remedy for the cracking of the berries of the Duke is to take a gimlet and bore through the stem which bears the bunch immediately below where it hangs. This, to some extent a sufficient one, destroys the small tubes carrying the sap from the roots to the foliage of that particular branch, consequently there is less for the downward flow to the fruit, and it does not crack.

Mr. Kirk of Alloa, who, like Mr. McIndoe, grows the Duke to great perfection, told me that now he never loses a berry of this Grape from splitting—he uses the gimlet. Last summer, after a heavy day's rain, our Dukes began to crack, and a man in four hours put a complete stop to the cracking of more than six hundred bunches.

Mr. McIndoe says scalding Grapes in hot water will make them crack, but surely scalding water and the proper atmosphere of a properly managed vinery are somewhat dissimilar.—WM. THOMSON, *Tweed Vineyard.*

KITCHEN GARDEN NOTES.

FRENCH BEANS.

THE cultivation of French or Kidney Beans is not attended with much difficulty in mild climates with the additional advantage of a well-sheltered garden, the soil of which is in a good state of cultivation. Where conditions less favourable have to be contended with, however, it may be well to remind those who have had little experience in vegetable-growing, that there are certain details connected with their culture which require special attention so that the plants may be afforded every chance of yielding fair crops. That this vegetable is much less hardy than most others should receive due consideration in selecting and preparing the ground on which the seed is to be sown. It is important that the borders or other plots selected should have a warm exposure. It need not be a matter of surprise that failures result when a border is chosen which is shaded most of the afternoon in the height of summer. A border having a south or south-west aspect is a preferable position on which to sow, but in many gardens where the soil and exposure are good heavy crops of fine beans are picked from the open quarters.

In bleak exposed districts where the soil of the garden may be cold and heavy, and the drainage inefficient, it is a good plan to have the former divided into breadths of 2 feet and then laid up in ridges for some time previous to sowing the seed. This is the best method for securing the full benefit of weather influences, more especially frost, which is well known to be a powerful agent in pulverising the soil. The ground, which it is presumed has been well dressed with decayed manure previous to ridging the ground, should be well broken with a steel fork in levelling the ridges, which must be done when the soil is neither very wet nor very dry, otherwise the plants cannot be expected to do well afterwards.

Regarding the proper season for sowing, the end of April is considered soon enough even in exceptionally mild districts and well-sheltered gardens. In one of the western islands of Scotland, although the atmosphere was uniformly humid and mild, I found during several years' practice there that owing to the exposed character of the country and lack of sufficient shelter therefrom, that nothing was gained by sowing French Beans till about the 1st of June. A sowing of seed at that time, although a fortnight later in yielding pods, is much more likely to do well than earlier sowings, which in cold exposed places can only be calculated upon as chance crops. Three sowings in most places are sufficient to maintain a good supply from the middle of August till they are cut down by frost, but in northern districts the last sowing must be made not later than the middle of June. With regard to the distance apart that the seed should

be sown, 2 feet from row to row is suitable; some gardeners allow 2½ feet, but the richness or poorness of the ground are the best guides in this matter, the latter distance not being too much on highly cultivated land.

The system finds favour with some of sowing extra thick, and when the seedlings have the first rough leaves, thinning and transplanting them on good ground, which often forms a useful succession. Care, however, should be taken that work of this kind is done in the absence of bright sunshine. After transplanting, give a little water to settle the soil about the roots of the young plants.

In very dry hot seasons, such as 1884, French Beans, in common with many other vegetables on light or medium soils, may require mulching in order to save them. The best time to do this is just after the ground has been well soaked with water. Here, however, last season they grew vigorously when other vegetables would have perished, I feared, if they had not been afforded timely assistance.

Referring to varieties, Osborn's Forcing, Negro Longpod, and Canadian Wonder do well in the north, and, from what I read in the gardening papers, in the south also. Speaking of early varieties, however, there does not appear to have been any improvements on older sorts for a number of years. In 1875 I gathered the first dish of Beans for the season a week before the end of July, and the earliest ever I knew to be picked from plants in the open border in any district of Scotland in which I have lived. The variety grown on that occasion was named Williams' Dwarf Prolific. For a number of years past this variety, by name at least, has disappeared from all the seed catalogues I have seen.

Gathering the Beans, although a simple operation to all appearance, is often best performed by those who are directly interested in securing as long a supply as possible, and making the most of the crop when this is necessary. Others are often guilty of doing the work carelessly, the consequence being that many old beans are left on the plants, thus preventing the younger ones growing to a useful size, and also spoiling the crop. All beans which have attained a useful size when not required should be at once removed.

A few degrees of frost in autumn at once puts an end to French Beans, therefore some protection is necessary if it is desirable to secure a few dishes as late in the season as possible. This can be done by placing a frame or two over the plants, or by other convenient means, such as light spruce branches, or mats adjusted so that there will be no danger of their breaking the stems of the plants.

AUTUMN-SOWN ONIONS.

I do not remember having so good a crop of these, or such strong plants, as this spring. They cannot be said to have had the advantage of a mild winter, as we have had frequent severe frosts since November, and the absence of much snow rendered them more liable to injury during frost, neither did the ground get much preparation at sowing time. Possibly I may offend those who hold strictly orthodox views with regard to deep cultivation when I state that the seed was sown on ground that had not been stirred with a spade at least for nine months previous to the date of sowing, which was about the 20th of July. It is to the earlier than usual date of sowing and the firmness of the ground combined, that I attribute the unusually good results of this season. On one or two previous occasions I have recognised the advantage of firm ground for growing other winter crops besides Onions. On all land, however, in this part of the country, which possesses a good depth of suitable soil, deep tilth is the order of the day for summer vegetables, and in general those who work their gardens in this fashion have been well rewarded.—D. MACKIE, *Ayrshire*.

LARDIZABALA BITERNATA.

Of deciduous climbers, whether hardy or half-hardy, there is, happily, no deficiency in our gardens; but the number of evergreen climbing plants hitherto available for general cultivation is so limited, that when we have named the common Ivy we have exhausted the list. To this valuable climber, which, although possessing few claims to beauty, is deservedly esteemed for its utility in covering walls and concealing other objects offensive to the eye of taste, the *Lardizabala biternata* will prove a formidable rival; for it appears to be equally hardy, produces its beautiful dark green glossy foliage in great abundance, and has, moreover, the additional recommendation of bearing flowers of a singularly interesting character, which in the case of the fertile blossoms, are succeeded by an edible fruit.

It is a native of Chili, growing as far south as Concepcion, whence it

was sent by George Thomas Davey, Esq., of Valparaiso, to Messrs. Veitch of Exeter.

The specific term, *biternata*, does not appear to be very happily chosen; for, although some of the leaves are biternate, they are more generally simply ternate, especially in the flowering branches, and occasionally they are triternate. The leaflets are often quite entire at the edge, but sometimes spinosely toothed, of a dark green colour above, but paler and veined on the under surface.

The *Lardizabala biternata* is an illustration of the dioecious class of plants; it is, in fact, both dioecious and polygamous; for, although the flowers of the plant represented in our figure produce stamens only, those of the fertile plant, which has not, we believe, been yet introduced to this country, yield both stamens and pistils; it differs also from the sterile plant in its one-flowered peduncles. These solitary flowers are succeeded by a many-seeded berry, which is sold in the markets of Peru and Chili.



Fig. 48.—*Lardizabala biternata*.

The pulp is said to be sweet and grateful to the taste. Its stems yield a very strong fibre, which is made into cordage.

The blossoms of the male plant are borne in drooping racemes, hanging from the axil of a leaf, the peduncle or flower-stalk bearing at its base two large heart-shaped bracts; and it is remarkable that these occur at the axil of the leaf, even where there is no flower-stalk. The calyx is formed of six fleshy sepals, arranged in two series, three of the segments being external to the others when in the bud. The calyx is the most highly coloured portion of the flower, and the petals being comparatively inconspicuous, and of a thin membranaceous mealy texture. The six stamens are united by their filaments into a column (monadelphous), and bear six oblong, incurved, pointed, two-celled anthers, which open at the back.

With regard to the propagation of the plant, it may be effected both by cuttings and layers in any ordinary soil. It will flourish in any situation not too much exposed to the sun, but appears to prefer shady places; and as it grows rapidly, when well established its merits as a substitute for the Ivy will, doubtless, soon be universally recognised.

In Peru, where it occurs as well as in Chili, it is called by the Indians *Aguilboguil* and *Guilbogui*; in Chili its native designation is *Coquilvoehi*. Two other species are described by botanists, *L. triternata* and *L. trifoliata*, which appear to differ from the *L. biternata* in not producing an edible fruit.

The plants of the order *Lardizabalaceae*, although few in number, are all of interest; they were formerly included with the *Menispermaceae* or

Cocculus tribe, to which the narcotic berry known as Cocculus indicus belongs, but are now classed apart, their many-seeded berries distinguishing them from the plants just referred to.

The order Lardizabalaceæ commemorates the services to natural history of Michael Lardizala, of Uribe.—W. T. I.

TRENCHING GROUND.

IN reply to Mr. Iggulden's letter (see page 208), I may state that I was not oblivious of the use and value of lime and the other numerous, but to me unobtainable, articles which he enumerates, and I would have been glad of them to give me temporary assistance, but certainly not as a substitute for trenching, as Mr. Iggulden suggests. I am perfectly satisfied with the results of my proceedings, and I believe I did what ninety-nine out of every hundred practical men would have done.

As I hinted in my previous communication, I grow Celery largely compared with other vegetables, as it is much used in the kitchen for culinary purposes as well as an adjunct to the cheese. Now, to grow Celery of 5 or 6 lbs. weight involves moving a quantity of soil for earthing up, especially if the distance between the rows is confined to 5 feet, and that is about the space we allow for each row, which we plant anywhere, providing we can secure 2½ feet on each side. This arrangement answers as well as trenching, and by distributing them all over the garden. The ridges are most convenient for sowing Peas on, as they do not shade each other or interfere with the other crops when so widely separated. I ought, perhaps, to state that my predecessor, who was here forty years, for the last fifteen years of his service failed to produce Celery that was fit to place before company, but whether he did so before I have no evidence. But it was of no consequence, as so little was needed, and his length of service indicated that he had given satisfaction. My engagement was with a new owner, and from three acres of ground it has devolved upon me to supply eighteen persons daily with fruit and vegetables, excepting Potatoes, for a portion of the year. The work has had to be performed by two mill hands, totally inexperienced but most willing workers. The seed supply would astonish Mr. Iggulden, but as it would be productive of no good to publish the amount I give it to the Editor, who, I am sure, will pronounce it a small sum in a locality where a gardener cannot save many seeds of his own growing. The arrangements of the family are such that, excepting twelve nights at most in any year, there is a dining-room dinner. No going abroad for a few weeks, nor yet to London for the season, when part of the supply is usually derived from the greengrocer. This is nothing more than hundreds of my brethren would have performed equally as well, but as Mr. Iggulden has introduced a little ostentation as to his doings I may be pardoned for drifting into a similar vein.

Mr. Iggulden tells us he can grow three roots where Mr. Temple grows one. I do not doubt this. My experience of small vegetables is that they are oftener in the pig-tub than on the table, and I never had any complaints made of such as Onions, Parsnips, Carrots, and Celery being too large.

In reference to Broccoli surviving the winter in market gardens whilst those in private gardens are destroyed, may be thus explained: Gardeners, as a rule, have to plant that vegetable between Potatoes, Peas, or some other crop. Many gardens have fruit trees in them, and are surrounded by walls or buildings, all of which favour a soft succulent growth, whilst those in the open are subject to conditions that harden the tissue as growth is being made.

I deem it unfair to make a comparison between a market grower's success and that of those who practise in private gardens. The former select their ground and cultivate those vegetables they find to succeed best and yield the most profit. Gentlemen's gardeners have to take to their garden in any hole or hillside where they may happen to find it, and they have to produce as many varieties of vegetables as two or three market gardeners combined. I never observed the market gardeners of Fulham grow any Broccoli, Onions, Carrots, Peas, and many others. There are noted market gardeners four miles from here, and I believe none of them attempt Broccoli. Whether it is because it is too hazardous a crop, or that it is not sufficiently profitable for the high rent (£10 to £14 per acre) which they have to pay, I am not in a position to say. All around this colony of market gardeners there is plenty of land let to farmers from £2 to £4 per acre, and some of it within a mile. But the market growers have fixed their boundary, and there they are, and no one else can compete with them, I might say, the other side of the fence. I never saw such samples of Veitch's Autumn Giant since that famous vegetable has been introduced as are produced by those market growers. Who would taunt a Fulham market gardener because he could not show similar results?

The success of many growers is due to circumstances as much as skill, and gardeners who have been noted for their productions in one place are very little heard of if they are moved to another part of the country. The Essex market gardeners and others who are fairly successful with the few varieties they grow have sufficient depth of suitable soil for their purpose without recourse to trenching. It is not a question with them whether trenching is necessary, but whether it will give compensatory returns. The expeditious way in which the ground can be prepared with the plough and harrow thrust the spade on one side altogether.

I purposely avoided any reference to fruit trees, as I did not wish to discuss the matter speculatively, and as I have had no experience of the

culture of fruit trees in a foot or so of soil. I had, therefore, no alternative but to accept Mr. Iggulden's teaching as being probably correct. The report of the Apple Congress, which I have not yet perused, should decide that as far as that fruit is concerned. Here the fruit trees, especially on walls, have been judiciously dealt with, and have about 2 feet depth of soil, and each tree is flagged underneath for a few feet from the wall. The former proprietor took much interest in the wall trees, and sought the best advice he could have at the time—sixty years ago. The bankrupt market gardener and his fruit trees alluded to by Mr. Iggulden reminds me of another incident of a gardener who bought £100 worth of fruit trees, of which not a dozen existed twelve months after. In this case the failure could not be due to trenching, as soil had to be carted to increase the depth. Anyone unacquainted with the details of both cases will be puzzled to account for the trees dying. Mr. Iggulden, it will be remembered, informed us that the market gardener lost his trees through trenching the ground. Your readers will form their own opinions.—W. P. R.

[The amount expended in seeds referred to above is a moderate one, and proves that our correspondent works economically as well as effectively.]

GLADIOLI CULTURE.

I AM sure all your readers look forward with pleasure for the "Notes from my Garden," contributed by "D., Deal," from time to time. Being written from experience and close observation, they possess an interest that plausible theories can never have for practical gardeners or amateurs. Yet, with this admission, I am very much of "Thinker's" opinion that "D., Deal," is by no means a sanguine man. Gladioli—I mean the hybrids of Gandavensis—have been partial failures with him, and he would have given up the culture long since only for his interest in and memory of former successes with this grandest of all autumn outdoor flowers. Yet I am inclined to think never was the Gladiolus more grown, and never did it more deserve to be, than in the present year. One of the reasons is that within my recollection never had it a finer season to grow and ripen than last year. To a friend in Dumfries, and another in the Co. Down, neither having so good a climate as I have, who hitherto had very much the same story of "partial failure" to tell, I felt warranted in tendering the same advice—viz., though on former occasions you have not succeeded to your satisfaction I feel justified in recommending you to try again this season; one of the great reasons I had confidence in in saying so being that the corms were never finer or better ripened. Proper ripening is the corner stone of success. For years I have been using Kelway's and my own seedlings and cormlets, and cannot at all agree with your correspondent in his preference for Souchet's or those of French introduction. Within the next fortnight is a capital time for beginners (though my earliest are above the ground) to plant. Having so frequently described my method in your columns I need not repeat it, but I may name a dozen magnificent sorts I had out of 300 named varieties last year—Duchess of Edinburgh, largest and latest; Calliphon, James McIntosh, Jessica, James Douglas, Dr. Benson, Marquis of Lothian, La Fiancée, Mrs. J. Eyton, A. F. Barron, Lamarck, and Pictus.—W. J. M., *Clonmel*.

HEATING AND HOT-WATER PIPES.

I AM much obliged to your two correspondents for their commendatory remarks upon my article on the above subject. Your correspondent "A Working Gardener," is perhaps aware of the difficulty of getting things altered after they have once been completed, however bad the arrangement may be. The house to which I alluded, with its open lattice stage and pipes beneath, was referred to for the purpose of pointing out the evils arising from massing a number of pipes below the stage. This has been the condition of the house in question for at least twenty-five years—and is only one case from amongst others with which I am familiar—and the present gardener, who would alter this state of things if he could, is not to be blamed for the mistake that has been made. The plants referred to have to be arranged upon this stage, and so the person in charge has no choice in the matter.

I have about fifty valves in use, and I believe there is only one that will hold back the water, and this is one of the old plug valves that will try the strength and patience of any man to turn it. Although this valve will effectually stop the water, I do not care for valves of this stamp, for they prove, even when turned full on, too great a check, and thus prevent the water in circulation from entering freely. Several of the valves in question held back the water well when they were first placed in, and for a time afterwards, but fail to do so now. The valves referred to have brass facings, and sediment may be the cause of their not proving effectual in holding back the water, but of this I have no proof. I have seen valves very good in this respect for a time when the valve has closed upon indiarubber facings, but this perishes in a few years, and I am not aware that the indiarubber can be replaced. Perhaps some of your correspondents will be able to inform me.

I have no doubt that joints packed with oakum and red lead or putty will last for many years on pipes where the strain is not great, but on the mains they need repacking in seven or eight years. The whole of the mains here were packed after this fashion, and they were nearly all leaking, or soon would have done, for the rope was thoroughly decayed, and could be picked out easily with a knife. I have recently had to repack the joints of 2000 feet of mains that were placed in new a little over eight years ago. Upon this I based my remarks respecting oakum and putty. Indiarubber rings afford a quick and easy mode of making joints, but

from what I have seen of them in large nurseries I certainly should prefer oakum and putty to them. They are useless close to the boiler, for they very soon perish, and this, I am afraid, would be their condition on the mains constantly in work and frequently very hot; they would last for several years where the strain upon the pipes was not great.—Wm. BARDNEY.

WITH due deference to Mr. William Bardney, you will perhaps allow me to express my surprise that anyone of his experience, referring to hot-water apparatus, should write as follows:—"The joints of all the main pipes that are buried in chambers and intended to remain permanent should be packed with iron filings, which will insure the joints remaining sound as long as the pipes last." Now this happy result is in direct contrast with my experience, and I should have said if there is any one point above all others to be insisted upon in the erection of hot-water apparatus it is, that no single joint should be made with iron filings. Long past and quite recent experience leads me to believe that there is no worse or less reliable method of packing a joint. Quite lately I have found several joints near together all burst by the expansion of iron filings. It may be said that if properly made such joints are perfect, and so they may be, but from what I have seen the best workmen are unable to ensure the conditions of success. I have in mind the work of a foremost firm, and I ask, if the work of this firm has failed in this respect over a series of years, can it be said that the method is anything but bad? I never knew the joints of hemp rope and red lead to give way in anything like the manner that those made with iron filings have done from time to time. Mr. Bardney condemns the use of oakum with patent putty or cement, and perhaps he does not refer to hemp rope and red lead, which makes, according to my experience and according to all I have been able to gather, the best joint we know of for permanent fixtures. Joints made with iron filings, I know of, deeply bedded in brickwork, and when the leaks occur what trouble and labour and expense there is in finding them. This is the work of a firm of repute, yet surely it would seem no more than a common-sense precaution to leave the joints fairly within reach. In all cases of extensive work the firm employed should be caused to leave a plan, showing the disposition of the pipes and where the hidden joints are to be found. There must be many well able to speak upon the subject of my letter, and let them express their opinion.—R. IRWIN LYNCH.

PRUNING AND MANURING ROSES.

THE former of these duties, as I write, is one of pressing importance. It should now be speedily finished as regards Hybrid Perpetuals, at least in most situations, and the weather of this month having been decidedly cold at night, and often by day, there will be less fear of bleeding. A note in the "Rosarians' Year Book" on the matter of bleeding should be widely known, if it always prove successful, and I meant this year, if necessary, to put it in practice; it was to dust the shoots with lime at the point of incision. This is said to form a cake over the cut. Last year I asked whether any Rose-grower had noticed that pigeons had a partiality for the young shoots of Roses and picked off the shoot as it started into growth. There was no reply that I have seen, but I think in my case these were the culprits, and I propose directly to dust the pruned dwarfs at once with lime in the hope that the pigeons also may be deterred from repeating the performances of last season by this addition to their dainty meal.

I have seen "M.'s" suggestion of last week as to the long 5 feet shoots, acted on after a fashion—viz., by tying some of these shoots to wire, and this answered fairly well, and in large gardens some such treatment at the north side of a bed devoted to exhibition hopes might serve two or more purposes. Firstly, being comparatively unpruned, thus giving earlier blooms not for exhibition; and, secondly, acting as a sort of hedge or shelter to the more tender varieties. It seems to me that the tying to the wire lines should be autumnal work.

There is just one other point connected with carrying out this matter. "M." has remarked that this growth at the time of ordinary pruning is several inches long. Now, if we lay ourselves out for utilising this earlier growth by either pegging down or tying to such a wire fence as I have suggested, it seems to me that we need also to give some protection to these shoots from late frosts. The acknowledged end of late pruning is to save the lower buds on which we depend for blooms from the April and May frosts. It will mar greatly the effect of a bed thus formed if the hedge thus intended as a protection be itself a disfigurement. The difficulty may be overcome by having an upper line of wire on which some Yew branches tied would probably save the early shoots, and later on this upper wire may be utilised for gradual tying down of branches. In order, also, to carry out this, it would be further necessary to remove each autumn or spring the growth of the previous season, and trust to the young growth.

As to the varieties that would succeed, we need free-flowering sorts, hardy in constitution, and good growers. I think many of the following would succeed:—Charles Lefebvre, Jules Margottin, Madame Clemence Joigneaux, Baron de Bonstetten, Madame Victor Verdier, Dupuy Jamain, Duke of Edinburgh, Marie Baumann (in some localities), Beauty of Waltham, John Hopper, Thomas Mills, Captain Christy (in some localities), and Cheshunt Hybrid. All of these are disposed to throw up strong shoots from the root, and therefore belong to the class favourable for the experiment.

In the main, my pruning ideas coincide with those of "M.," but I do not quite agree with him when he says "shy-growing varieties should never be hard pruned, as there is a possibility of crippling them." In

warm localities this treatment may succeed and may induce a shy grower to behave properly. The longer I live, and the more I watch my Roses, the more convinced I become that if a plant starts badly after planting and becomes shy in growth, so it will continue throwing up little delicate shoots year after year, rarely blooming at all, or nothing approaching the natural size. It may receive the same treatment as its next door neighbour, but it never takes any note of it and makes no response. Such a plant I cut hard home, in the hope that one or two buds may receive all the benefit of the root and that a strong shoot may result. By so doing I may, possibly I do, cripple some plants; but I must say I rarely regret them. In Rose-growing a good start is half the battle.—Y. B. A. Z.

THE PEACH AND NECTARINE.

[An essay read before the Liverpool Horticultural Association by Mr. A. Jamieson, Haigh Hall Gardens, Wigan.]

THE Peach and Nectarine are, I may say, as far as cultivation is concerned identical; it will, therefore, be understood that when I mention the Peach, the Nectarine is included. There are many points connected with these interesting fruits that might engage our attention. For example, I might mention their native country and when they were introduced to this country. The most suitable stock on which to bud them might be discussed, or it might be asked, Is it really necessary to bud them at all? In the Peach-growing States of America they do not trouble themselves with budding, but plant the stones, and in three years, I am credibly informed, fine fruit is produced. Their cultivation in the open air in this country could also be considered, many fine Peaches have been so grown, I have for several seasons in succession had good crops in the neighbourhood of London, and the only protection they received was a covering of hexagon netting when the trees were in bloom. It is, however, my intention to confine my remarks to the cultivation of the Peach under glass, as in the north this is the principal feature in connection with its cultivation, and I will endeavour to make my remarks brief and practical.

Form of House.—I have no very decided opinion on this point. I have grown Peaches in span-roofed houses and in lean-to's of various sizes, &c, but could not say there was much difference in the results. For exposed situations and early forcing, however, a lean-to with a southerly aspect is the best. I prefer rather large houses, say from 12 to 18 feet wide.

Trellising.—A footpath usually runs along at some little distance from the back wall, and a curvilinear trellis extends from this to the front, in height proportionate to the house, not too high, or it will shade the back wall too much. The back wall should be wired, keeping the wires about 6 inches apart, and some little distance from the wall. I have seen a trellis run right up the roof at some 2 feet from the glass, and the back wall covered with such plants as Camellias. This is a pretty arrangement, but I prefer the former.

Heating.—It is of great importance, and is, after all, the truest economy, to have plenty of piping so as to maintain the temperature without unduly heating the pipes, and, if possible, some of the pipes ought to be near the front ventilators so as to warm the air before it comes into contact with the tender foliage.

Formation of Borders.—Having excavated the soil about 3 feet deep, run a drain along the front, with cross drains at intervals of 2 or 3 yards; the bottom ought to fall a little from the back to the front. Place stones or broken bricks to the depth of 8 or 10 inches, the smallest at the top, on which place a layer of sods with the grass side underneath. It is important to drain the border well, the Peach is a moisture-loving tree, but does not like stagnant water at its roots. Now comes the question often asked, What is the best soil or compost for the Peach? I often think we attach too much importance to this. I have found that the tree will thrive well in any soil sufficiently porous, and most of us find that we must be satisfied with such as we can get. Speaking generally, the top spit—not too deep—of good pasture land will suit admirably; if stiff and heavy add a greater proportion of lime rubbish or broken brick. For the ordinary houses I do not consider it necessary to have any outside border, I prefer to keep the roots near home. It is not necessary to add any manure to the soil; that can be applied to the surface when wanted.

Planting.—If there are no trees on outside walls available for planting dwarf-trained trees, riders are generally planted alternately, the latter covering the top of the wall or trellis, while the former fills the bottom. Spread out the roots nicely and evenly, keeping them near the surface, and making the soil firm.

Pruning and Training.—Formerly, by many of us, the young trees were cut back in many cases very severely. This, I am

onvinced, is wrong. I scarcely ever cut back a young tree unless the wood is very green. I am a firm believer in the extension system, and think that the sooner a young tree fills the allotted space the better, and the larger the space the better. Being firmly convinced that by far the best results are obtained from large well-developed trees, in pruning established trees I seldom shorten any of the shoots; and I also hold that the object of the cultivator should be to reduce the winter pruning to a minimum, and to this end as soon as the fruit is gathered I cut out such branches as have had fruit and any that might not be wanted for the next season, rearranging the shoots, &c. This lets in the sun and air, and has a most beneficial effect on the tree. Some form of fan-training is best adapted for the Peach, and it is desirable to have symmetry as far as possible, but in the case of large and old trees it is of far more practical importance to have the trees well covered with sturdy shoots regularly distributed from the bottom to the top of the tree. I think we all err in leaving too much wood in our trees, 5 to 6 inches apart is quite near enough for the shoots.

Transplanting and Root-pruning.—This is beneficial and often necessary, as it induces fruitfulness. We generally find that young trees grow too strongly, the wood green and little fruit. In the case of such trees I transplant and root-prune every year, cutting out the strong roots, shortening the very long ones, and in a few years, instead of long bare roots, there is a mass of small fibry roots and the trees bristling with plump fruit buds. I have a rather extensive collection under my care, and there is not one Peach tree in the whole lot that has not been root-pruned within the last three years, and most of them within two. In the case of large trees that may not have been root-pruned for many years I have found it advisable to do one-half one year, the other the following. Begin with a radius from the stem of 5, 6, or 8 feet, in proportion to the size of the tree, cut the breadth of a spade right down to the drainage, then with a fork work out carefully all the old soil up to the stem of the tree, or as near as possible. See that the drainage is all right, then fill up with fresh fibry soil. Spread out the roots carefully, keeping them well up towards the surface. Give a few potfuls of tepid water, and there will be better fruit than before. It is surprising with what avidity the roots seize upon and permeate the new soil. Opinions differ as to the best time for root-pruning. I have tried it before the fall of the leaf, but with no great success. Many say this is the proper time. I have found that by far the best results have been obtained by lifting and root-pruning some time after the fall of the leaf. In this respect, however, the Peach is a most accommodating tree. Some eight years ago in rearranging two Peach houses I had a few spare trees, which in November were laid in by the heels in the open air. Amongst them was a rather large tree of Noblesse. On the 20th March following I found a Cherry tree was to have only a very few fruits. I directed my foreman to take the Cherry tree out and try the Noblesse Peach in its place. He looked at me with surprise, and said, "Do you expect fruit from it this season?" I replied, "We will try it." The tree was planted, well watered, the blossoms then just beginning to expand. We shaded and syringed the tree for a few days, and that season we were rewarded with a fair crop of Peaches considerably above an average size, and the tree has gone on well ever since. I may also add that some of the best Peaches I have ever had have been produced by trees that were root-pruned the previous winter. I do not say that it is necessary in some soils and localities to lift and root-prune so often. I find that the trees in this soil can only be kept in good condition by frequent root-prunings and renewal of soil.

Watering.—Probably this is the most necessary of all operations, and I fear often is very imperfectly performed. I am convinced that more Peach trees are injured from this cause—insufficient watering—than all other causes put together when borders are well drained. In the season of growth they require very large quantities; and, in fact, should not even in winter be allowed to become dry. If in winter they do get dry the buds are sure to fall when they begin swelling. In all my experience I have only met with two or three cases in which they have been injured by too much water, and that has been when the borders were old and the drainage defective. I have met with scores of cases in which they have suffered from a scanty supply. On a hot day, when I have noticed symptoms of distress in the shape of flagging leaves, I have said to the man in charge, "That tree must be dry?" The answer often would be, "I gave it so much only the other day." A fork is brought, we dig down, and nearing the bottom of the border we find it quite dry, and yet the quantity given seemed large. The question may be asked, How often would you water; and how much? This I cannot answer, so much depends on the condition of the roots, border,

soil, &c. In some cases when the fruit has been swelling I have given water three times a week in large quantities; in other cases once a week might be too often.

Thinning the Blossoms.—I have practised this for many years. Early trees do not generally want so much as later ones, but as soon as the buds begin swelling and show colour, I rub off all on the under side or at the back of the trellis, thin out the doubles and trebles, leaving the largest and best placed blossoms to set. This, I think, relieves the tree of an unnecessary strain, the blossoms left are larger, and, everything else being equal, it follows that the perfected fruit will also be larger. Every year's experience convinces me that this is labour well spent. With a little practice a man can soon rub off a great number.

Disbudding.—This is commenced early; in fact, when the trees are in bloom, taking off a few at a time, and as far as possible the weak and strong shoots, leaving the medium-sized. If a strong shoot must be retained stop it once or twice, and try to equalise the growths as much as possible.

(To be continued.)

PEAS IN TRENCHES.

PEAS sown early in April will form pods and be ready for use in July, and as the weather is extra hot and the soil very dry then as a rule, those which are sown on the surface, especially of shallow soil, are sure to suffer. They may grow and bloom and come into bearing, but the produce will be dry and deficient in flavour, and the crop will very soon become too old for use. We never knew of really sweet tender green Peas being gathered from rows rooting near the surface during the summer, and the time the crop is in season is very short. When the plants are growing in well-manured trenches, from 6 inches to 1 foot deep, the roots are not at all liable to be influenced by drought, while the produce from such is tender and full-flavoured. I have begun gathering Peas from a row in a trench on the 1st of July, and in four weeks afterwards the Peas were still being produced green and tender, but I could never do anything like this with Peas on the level. Some think it is a waste of time and money to make trenches for Peas, but I am not of this opinion. Indeed, I think growing summer Peas in trenches is the most profitable mode of culture of any that could be followed, and to have Peas in the very highest state of perfection from the middle of June until the middle of September they should all be grown in trenches.

It is a mistake to plant the earliest crops in trenches, because if February and March were cold wet months much of the seed would be likely to perish, as it did here when I was experimenting one spring, but in April all danger of this is past. Should the autumns prove wet it is rather a disadvantage to have the latest crops in trenches, especially in stiff soils or wet districts, but where it has been noticed that the late crops suffer from drought in autumn every row may be sown in a trench. Those who make fancy Celery trenches, and are at much trouble to have them perfectly straight and very level on the sides, need not spend so much time on those for Peas. A good and cheap way to make them is to take the line and stretch it along where the row is to be, then form the trench from 6 inches to 1 foot in depth, with the line as a guide on one side and judge by the eye on the other. From 15 inches to 18 inches is a good and suitable width for each, and when the soil has been roughly removed put a good layer of manure in the bottom. Fork this in and then sow the seed. Push the sharp sides of the trench over on the seed with a rake, levelling it at the same time, and the work has been completed. In windy positions these afford much shelter to the plants when they are tender and small, and if watering has to be done at any time it is much more easily emptied into the trenches and surer of getting to the roots than attempting to drench a smooth surface; but it is very seldom that artificial watering has to be resorted to in trenches, and this is a great gain.—J. MUIR.

CRYSTAL PALACE SHOW.

MARCH 27TH AND 28TH.

THE Exhibition of spring flowers held at Sydenham on Friday and Saturday last, though of moderate extent, included some fine groups of bulbs and miscellaneous plants which furnished a rich display of colours. A spacious marquee was formed in the north nave of the Palace, and though the canvas employed was somewhat too heavy the effect was good, and much superior to the ordinary way in which these shows have been held—namely, with festooned canvas above only, and not at the sides, as in this case. There was, however, one objectionable feature—the stages had a very bare appearance without any baize or other material to conceal their supports, and they were also fully too high to permit the flowers being seen to the best advantage. Competition was not keen in any of the classes and several were unrepresented, but the groups contributed by the nurserymen amply compensated for any deficiency, and these really constituted the chief portion of the Show.

Several classes were devoted to bulbs, and the Hyacinths were particularly fine. With thirty-six Messrs. H. Williams & Son, Finchley, won the premier award, showing very handsome examples with large compact spikes, some of the best that have been exhibited in the metropolis this season. They were selected from some thousands, as these exhibitors and the one who gained the second place, Mr. H. R. Wright, Turner Road, Lee, grow large numbers of Hyacinths and other bulbs for market. The most notable of the varieties in the first collection were Grandeur à Merveille, Von Schiller, King of the Yellows, King of the Blues, Gigantea Ida, L'Innocence

Vuurbaak, Lord Derby, Czar Peter, Grand Maitre, Lord Macaulay, Voltaire, Ruber maximus, and Moreau. In Mr. Wright's collection Lord Derby, Mont Blanc, King of the Blacks, Garibaldi, and Von Schiller were similarly fine. Messrs. W. Cutbush & Son, Highgate, were third with good plants bearing handsome spikes.

In the class for thirty-six Tulips Messrs. Cutbush & Son were easily first, staging excellent examples of Joost Van Vondel and the White variety, Cottage Maid, Ophir d'Or, Fabiola, Vermillion Brilliant, Proserpine, Hector, Van der Neer, Rose Gros de Lin, Keisers Kroon, and White Pottebakker, free, bright, and beautiful. Messrs. H. Williams & Son and H. R. Wright followed with rather smaller flowers, but bright in colour. Three beautiful collections of twenty-four Narcissuses were entered by Messrs. H. Williams and Son, H. R. Wright, and W. J. Watson, Newcastle-on-Tyne, who were awarded the prizes in that order. The leading varieties were Gloriosus and Bazelman major, which were represented by some strong spikes, ten or twelve in a pot. Lilies of the Valley were similarly good from the same firms, were also profusely flowered. The Cyclamens from Mr. H. B. Smith, Ealing, were fine healthy plants with sixty to eighty flowers each, were deserving the first prize awarded for them in the class for thirty-six plants. Mr. R. Clarke, Twickenham, who followed had some beautiful varieties in his collection; and Mr. F. J. Hill, gardener to H. Little, Esq., Hillingdon, Uxbridge, who was third, showed well-grown plants. In the class for twelve Cyclamens the honours were shared by Mr. Wiggins, gardener to W. Clay, Esq., Kingston, and Mr. F. J. Hill, who were first and second respectively. Messrs. H. B. Smith and Wiggin, and Miss Clay were the chief winners in the classes for eighteen pots of Mignonette grown in the market style, each having dwarf healthy specimens bearing dense spikes. With Tree Mignonette, however, Mr. J. R. Bird, The Gardens, Lodgemore, Alleyn Park, West Dulwich, was the only exhibitor, gaining the premier prize with neat specimens, the stems 2 to 3 feet high and the heads about 18 inches or 2 feet in diameter well flowered. A number of other umbrella or pyramidal specimens were also staged by the same exhibitor.

A class was provided for twenty-four greenhouse Azaleas, and in this Mr. C. Turner, Slough, secured the premier award with compact globular or pyramidal plants, 3 feet high, and loaded with flowers. The best were A. Borsig, double white; Roi d'Hollande, single, deep red; Mdle. Marie Lefebvre, single, white, good; Sigismund Rucker, rose and white, single; Mrs. Turner, single, salmon rose and white; Cordon Bleu, purple; and Jules Verne, white, with red stripes. Mr. H. James, Castle Nursery, Lower Norwood, was placed second with a good selection of varieties. Mr. C. Turner also had the chief collection of Amaryllises and Auriculas, being first in each class. Mr. J. Ford, gardener to J. C. Lanyon, Esq., Birdhurst, South Croydon, staged the best collection of twelve Cinerarias, the plants healthy, and the flowers of bright rich colours.

An imposing and graceful group of stove and greenhouse plants gained Messrs. J. Laing & Co., Forest Hill, the first prize in the class, and formed, with the handsome second group from Mr. J. James and a number of bulbous plants from the Crystal Palace Company, a magnificent bank at the entrance to the Show. Messrs. J. Laing's group contained a due proportion of Palms, Crotons, Ferns, and Caladiums, with numerous Orchids (especially Dendrobiums), Ericas, Cytisus, Begonias, Epacrises, and other plants being freely and elegantly arranged. Mr. James had some larger specimen plants of considerable value, but with a somewhat heavier appearance.

Of the miscellaneous exhibits the charming group of Roses in pots from Messrs. Paul & Son, Cheshunt, was the most admired. The plants were all healthy, and in several cases remarkably well flowered, Souvenir d'un Ami, Avocat Duvier, Duke of Teck, Celine Forestier, La France, and Madame Lacharme were especially noteworthy in this respect. The graceful diminutive Rosa Polyantha, Mignonette, and its white companion Parqueritte were also noteworthy in the group. Some interesting hardy plants were also shown by this firm. Messrs. H. Lane & Son, Berkhamstead, had a large group of Rhododendrons, including many varieties. Messrs. J. Carter & Co., High Holborn, had a basket of Scarborough Lilies (*Vallota purpurea*) in flower, extremely bright and effective. Mr. J. James, Slough, had a stand of Cineraria blooms; Messrs. Hooper & Co., Covent Garden, had a basket of Tree Carnations; Mr. H. R. Wright, Turner Road, Lee, showed 120 Tulips in pots; Mr. H. B. Smith had a group of Cyclamens, and Messrs. Barr & Son, Covent Garden, an extensive collection of Daffodils and hardy flowers. Extra prizes were awarded to the preceding, and first-class certificates to the following plants:—

To Messrs. Barr & Son for *Chionodoxa sardensis*, *Narcissus pallidus præcox*, and *N. Barri conspicuus*, which have been previously described; and to Mr. H. B. Smith, Ealing, for the following Cyclamens:—

Cyclamen Miss Nightingale.—A fine variety, with very large flowers; the petals pale rosy purple, and a darker tube.

Cyclamen The Major.—Very handsome, white or blush tinted, crimson tube; broad petals of great substance.

LAPAGERIA ALBA AT OAKBROOK, SHEFFIELD.

A NOTICE of this plant appeared on page 328 of the last volume, and I again call attention to it for the purpose of recording what appears to be a curious freak in its growth this season. A few weeks since it commenced growing more strongly and rapidly than before, and not content apparently with throwing up four very strong new growths from the base, each as thick as a man's finger in the ordinary way, I noticed a little more than a week since one stronger and thicker than either of the others coming through the bottom of the box in which the plant is growing. I have long noticed that *L. alba* when strong differs from *L. rosea* in the habit it has of forming an extended rhizome-like growth underground, so that the young growths appear at a considerable distance from the original base. *L. rosea*, on the other hand, invariably throws up the annual young growths close to those of the preceding year, thus keeping the stems of the plant close together. The four young growths of *L. alba* previously alluded to as having appeared in a normal form—*i. e.*, at the surface of the box—had each run underground as far as the box sides would allow them, and turned up to daylight in the extreme corners.

In the case of the fifth growth it appears by some mischance on reaching the box sides to have turned downwards, and on reaching the bottom to have wandered about in search of an outlet, until finding a crack in the boards it forced its way through. The box is about 15 inches deep, and the point of the growth is now about 3 inches above the top, it having turned up outside the end. Since I noticed it, it has made an average growth in height of 2 inches per day.

When on a visit to the Handsworth Nurseries (Messrs. Fisher, Son, and Sibray) a week or two since, I was shown a similar strange freak on the part of one of the largest specimens of *L. alba* growing in a No. 1 pot, which had produced a very strong growth through one of the side drainage holes at the base of the pot.—W. K. W.

NOTES ON GRAPES.

KEEPING GRAPES.—I have been during the past season trying the keeping properties of a number of Grapes, none of which has come up to the standard for late work of our old friends Lady Downe's and Alicante. These at the middle of March were as sound as they were in October, and the flavour has not deteriorated, nor is likely to for weeks to come. Gros Colman is still eatable, but is now shrinking. Alnwick Seedling is getting past use; John Downie, which appears to be much like the latter, is also past its best. Black Hamburg, Muscat, Muscat Hamburg, and a few others we can keep in good condition to February, but after that time Alicantes and Lady Downe's are the best. The latter is preferred by us to all others for the latest supply.—M. TEMPLE.

STRAWBERRIES.

A FEW Strawberries at this season are always a welcome addition to the usually scanty dessert. The various batches now in hand throw up their flowers plentifully, and will doubtless repay for the labour necessary to secure a good crop. Some men are terribly afraid of placing Strawberries on shelves in fruit houses for fear of red spider, but I cannot say that my experience leads me to believe that Strawberries are more subject to red spider than either Vines or Peaches, provided they are properly supplied with water. Those who are troubled with this insect let me advise to give the plants about a pint of liquid manure (stable drainings), in every gallon of water used, from the time they are housed till the fruit begins colouring, and see that they never become dry and shrink from the pots at any time. Syringe twice a day in warm weather, and I venture to say there will be little risk of spider as far as Strawberries are concerned.

When the plants are in bloom they enjoy a temperature, by sun heat, of from 60° to 80° during the day, but the temperature at night should not exceed 50°, and may fall to 40°, rather than employ much fire heat. As soon as a sufficient number of fruits are set on each plant all the others should be pulled off, and if the plants have to be moved from one house to another, as is generally the case, the fruits should be supported by tying to a short stake. This prevents them being crushed when moving, keeps them from becoming wet while watering, and allows them full exposure to the sun. At the time of thinning the fruit the plants should be moved into a Cucumber house or stove, where they can have a temperature of from 60° to 70° at night, and from 80° to 90° with sun during the day. When the fruit begins to colour our plants are moved into a late vinery where the Vines are beginning to come into leaf, and when this becomes too much shaded later lots are finished off in a late Peach house, and these houses suit them fairly well. I may state that we take our late runners in the autumn, lay them in, and pot them when convenient in spring, as advocated in these pages by others, and we find it less trouble than is sometimes experienced in getting time to attend to early runners.—R. INGLIS.

THE NATIONAL CHRYSANTHEMUM SOCIETY.

ON Monday evening, the 30th inst., the last meeting of the General Committee of this Society for the present season was held at the Old Four Swans, Bishopsgate Street Within, E.C. The President, E. Sanderson, Esq., took the chair shortly after seven o'clock, being well supported by the other officers of this Society.

After the minutes of the last meeting (which was reported in our issue of the 19th February) had been read and confirmed, the Honorary Secretary, Mr. Wm. Holmes, read letters from the Secretaries of the under-mentioned societies, expressing their desire to become affiliated with the N.C.S., in accordance with the terms set out in page 15 of the schedule:—Sheffield and West Riding Chrysanthemum Society; Brighton and Hove Chrysanthemum Society; Weald of Kent Gardeners' and Mutual Improvement Society; Highgate, Finchley, and Hornsey Chrysanthemum Society; Scarborough Floral and Horticultural Society; Ascot, Sunningdale, and District Horticultural Society; Bath and Floral Fête and Band Committee; Lincoln Chrysanthemum Society; Dorset County Branch of the National Chrysanthemum Society; Ealing, Acton, and Hanwell Horticultural Society. The election of the representatives of these societies to the General Committee was then proceeded with.

After the nomination and election of new members the Committee inspected the proposed designs for the medals. The design which was agreed upon represents the different sections of the Chrysanthemum—viz., the Incurved, Japanese, Japanese Anemone Pompon, &c.—and promises to be a very artistic reward to those growers who may be fortunate enough to gain one. The customary votes of thanks having been passed and responded to, brought the evening's work to a close. The meeting was well attended.



IN the gardens of the Royal Horticultural Society at Chiswick there is wonderful promise of FRUIT BLOSSOM, Pear trees especially being densely covered with advancing buds. Plum blossom is moderately plentiful; Apple blossom sufficiently abundant; Peaches flowering freely. The prospect of fruit is the more hopeful, inasmuch as the blossom is decidedly later than usual in consequence of the low temperature and absence of rain. Almond trees in gardens around the metropolis are now in full beauty, the slight frosts not having materially impeded the expansion of the myriads of flowers nor marred the beauty of the trees.

— IN the Gardens above referred to (Chiswick), we recently admired a TRIO OF PRETTY SAXIFRAGES, worthy of a place in all collections of hardy alpine plants. The species in question are *S. Burseriana*, white; *S. oppositifolia*, dark lilac; and *S. sancta*, deep yellow. The plants are dense in habit, and only grow an inch or two high, their flowers being very conspicuous and distinctly attractive. These are admirable plants for rockeries, and are deserving of a good position. They are also extremely pretty grown and flowered in pots in cold frames.

— ROSE SHOW FIXTURES.—The following are the dates of Rose Shows for the present year:—Canterbury, June 27th; Maidstone, June 29th; Farningham, July 1st; Bath, July 1st; Cardiff, July 1st; Reigate, July 2nd; Hitchin, July 2nd; Crystal Palace, July 4th; National Rose Society, South Kensington, July 7th; Sutton, July 8th; National Rose Society, Manchester, July 11th; Wirral, Birkenhead, July 18th; Helensburgh, July 23rd; Darlington, July 25th.—D., Deal.

— A CURIOUS but pretty little plant is flowering in the Capel House at Kew—namely, *CRASSULA PYRAMIDALIS*, a rarity even in botanical collections. It is as the name indicates, pyramidal in form, about 2 inches high, with the leaves thin and arranged in a closely imbricated manner, which alone gives the plant a strange appearance. The flowers are very diminutive, with narrow petals, and are borne in dense clusters near the apex of the stem. The symmetry and smallness of the parts render the plant very interesting.

— IN the Orchid house at the same establishment the distinct and beautiful *ONCIDIUM PHALÆNOPSIS* is flowering, and it is surprising that so charming an Orchid should continue so scarce in gardens. The flowers are of medium size, not 2 inches in diameter with a relatively large lip, the ground pure white with a colouring of rich violet purple, which contrasts admirably with the purity of the other portion of the flower.

— IN the herbaceous plant department, amongst numerous Squills, Hellebores, Primulas, &c., an uncommonly fine variety of *CHIONODOXA LUCILLÆ* is very noticeable. The flowers are fully 2 inches in diameter, with good petals and bright in colour. It appears to be a fixed variety for Mr. J. Douglas of Ilford has a similar form, perhaps slightly larger, and equally good in colour. It is quite superior to the ordinary form of the lovely "Snow Glory." The darker, smaller, and less beautiful *C. sardensis* is also flowering at Kew, as in several other gardens; but it is not likely to become so great a favourite as the first-named.

— A REPORT of the WESTERHAM SHOW held last week unfortunately reached us too late for insertion. We gather, however, that it was very successful, bulbs and other spring-flowering plants being very abundant. The principal prizes were gained by Mr. Bolton, gardener to Mrs. Spottiswoode, Coombe Bank, Sundridge; and Mr. Hubbard, gardener to J. H. Platt, Esq., Dene Park. The Secretary, Mr. E. Roberts, deserves much praise for the general arrangement of the exhibits.

— FOR some time a PARK FOR SOUTH LONDON has been under consideration, and it now appears probable that the desired boon will be obtained. This new Park is situated at Dulwich, and consists of seventy-two acres of land, which are at present owned by the Governors of Dulwich College. These gentlemen propose to make a free gift of this to the inhabitants, and Dulwich Park will, if the scheme be carried out, rank as second only to Battersea Park in size, and far surpassing any other open space on the south side of the water, with the exception of the Park at Richmond. A Bill is now before Parliament, introduced by the Metropolitan Board of Works, which will enable the Governors of the College to carry out their intentions.

— NATIVE GUANO.—We have received from the Native Guano Company a collection of testimonials showing the results of the practical application of this fertiliser on farm and garden crops and flowering plants. Each testimonial contains the name and address of the writer of it, the evidence in favour of the manure being of a most satisfactory character. We may add that we never saw finer roots and other vegetables than at an exhibition at Aylesbury as grown with the aid of this Native Guano.

— THE PRIMROSES shown by Mr. Anthony Waterer at the recent meeting of the Royal Horticultural Society were greatly admired, their colours being so bright and varied. From pure white and the most delicate shades of yellow through rich gold and orange, bright or deep red, maroon, crimson, and purple, the range of tints is surprising. The flowers are large and in most cases beautifully formed.

— THE SPECIAL EXHIBITIONS in the London nurseries are just now at their best. We have previously referred to the Orchids and Amaryllises at Chelsea. Mr. B. S. Williams also has at his Upper Holloway nurseries an extensive display of Hyacinths, Tulips, Narcissuses, Orchids, and Amaryllises, which will attract many visitors. Messrs. W. Cutbush & Son, Highbury, similarly provide an exhibition of bulbs and miscellaneous spring-flowering plants this week.

— "THE most attractive plant at the recent London shows was the OLD SCARBOROUGH LILY, *VALLOTA PURPUREA*," remarks an experienced cultivator, and certainly no plants caused more surprise than those from Messrs. Carter & Co. We are not accustomed to see the brilliant scarlet flowers of this plant in March, and they made the Amaryllises look dull beside them. We understand that this habit of flowering is always observed in imported bulbs.

— A PERTHSHIRE correspondent writes the following respecting the PROSPECTS OF THE SEASON IN SCOTLAND:—"We have had for some time very favourable weather for outdoor operations and work well advanced. Friday was rather a disagreeable day of wind and rain, and while I write the weather, though fair, is very cold. There is a grand appearance of outdoor fruit this season. Should the weather be at all favourable we shall have a fine fruit crop, as buds were well ripened in autumn, and are appearing to burst plump and strong. Indoor fruit is very promising."

— THE ROYAL CALEDONIAN HORTICULTURAL SOCIETY'S schedule for the present season is now issued, and in it the shows are announced to be held on the following dates:—April 8th and 9th, July 8th and 9th, Sept. 9th and 10th, and November 25th and 26th. Numerous valuable prizes are offered in all the leading classes for plants, flowers, fruit, and vegetables. Amongst several other special prizes, Andrew Paul, Esq., Gilmore Place, Edinburgh, offers a challenge vase, value £10, for exotic Ferns, which will be won by the exhibitor who is the most successful in classes provided for the purpose at the four shows of the Society. "The successful competitor's name to be engraved upon the cup and to remain in his possession until the following Show."

— HAREFIELD GROVE GARDENS, near Rickmansworth, the seat of George Webster, Esq., and under the management of Mr. John Gough, is fast becoming a remarkable place for the cultivation of fruits, flowers, &c., no less than 102 houses being at present devoted to their culture, and to celebrate the near completion of these a dinner was given to the *employés* of the estate, nearly 100, in addition to several visitors specially invited. This took place on the 25th ult., and Mr. Edward Bennett of Potter's Bar presided. The toast of Mr. Webster's health was proposed and most warmly received, as was that of "Success to the Harefield Grove Gardens, and Mr. Gough's Health." Mr. B. S. Williams was present and spoke in high terms of Mr. Gough's doings, and the great liberality of Mr. Webster in regard to the estate. Mr. Richard Dean responded for

gardening literature, and a most enjoyable afternoon and evening were spent.

— MR W. BARDNEY writes:—"The following VARIETIES OF AZALEA INDICA, noted from amongst the splendid bank contributed to the Liverpool Spring Show by Messrs. R. P. Ker & Sons, are worth a place in all gardening establishments. All who contemplate increasing their collections will find Madame Herman Seidel, James Veitch, Antigone, Comte Charles de Kerchove, Dame Mathilde, Heros Æemon Wardner, Baron Killesch Von Horn, Bignoniæflora plena, and Phœbus, decided improvements upon older kinds, and include single as well as double, a good variety of colour, flowers of large size and great substance. The collection contained a great many fine varieties, but the names of those given were much the finest and the best Azaleas I have yet seen."

— A CORRESPONDENT writes:—"At the FULWOOD FLORAL AND HORTICULTURAL SOCIETY'S spring Show, held in the New Public Hall, Preston, on the 17th and 18th inst., Mr. E. W. Troughton gained the premier position in the open class for twenty-four single Hyacinths, Ed. Payne, Esq., being a very close second. For twenty-four double varieties the same two exhibitors were again successful, and in the same order as named, both showing remarkably well. In the amateurs' class for twenty-four singles, E. Rodgett, Esq., was first and J. B. Dixon, Esq., second. For twenty-four doubles the same competitors were again first and second in the same order. For the best twenty-four Hyacinths in the classes enumerated a gold medal, in addition to the money prize, was awarded, and Mr. E. W. Troughton was the successful exhibitor, being several points ahead of Mr. Rodgett. The display of Hyacinths was good both in quality and quantity, in fact they were the feature of the Exhibition. The prizes offered throughout the schedule were well contested, the result being a very fine spring show. The arrangements of the Exhibition were admirable, the whole of the exhibits being staged the previous night, therefore no hurry and bustle on the morning of the Exhibition. Mr. John Atherton, the able Secretary, is to be congratulated on the good management.

—"C. W. W." writes that the "BATH EARLY SPRING SHOW" was held in the Assembly Rooms on the 25th of March, and was a great success. The exhibits were exceedingly numerous, of unusual excellence and most tastefully arranged. Whether from the novelty of the Exhibition in this charming city, or from the inherent love of flowers which the residents have, I know not, but the sight of so large a number of visitors to the Show must have been extremely gratifying to the gentlemen who organised the Show. The whole of the productions were staged in two large halls, which presented a most brilliant and charming appearance. The chief feature was, of course, the Hyacinths, Tulips, Narcissi, and other spring-flowering plants, the prizes offered for which occasioned a very keen and spirited competition. The miscellaneous groups of plants contributed by Mr. J. Cypher of Cheltenham, Messrs. Cooling & Son, Bath, Mr. W. C. Drummond, Mr. E. E. Bryant, and others, consisting of Orchids, fine-foliaged plants, Palms, and Ferns, interspersed with flowering plants, were very effective indeed, as was also a choice collection of Narcissi (not for competition) exhibited by Mr. Dorrien Smith, Tresco Abbey, Scilly Isles. This collection consisted of nearly one hundred varieties, and although several of them were very similar in a decorative point of view, yet there were some very distinct, rare, and novel, and all if we may judge from the keen interest shown by visitors as well as professionals, were extremely beautiful."

BIRMINGHAM SPRING FLOWER SHOW.

MARCH 24TH AND 25TH.

THIS fully came up to the expectations of the Committee, for the general excellence of the exhibits was very noticeable. Some good Orchids were shown; in the class for six two collections were so close and good that the Judges placed them equal first. In the Right Hon. Joseph Chamberlain's collection, Mr. Cooper, the head gardener at Highbury, had fine examples of *Odontoglossum Ruckerianum* and *Dendrobium Wardianum* Lowii. In the other collection staged by Mr. J. Morgan, gardener to A. W. Wills, Esq., Wyldigrew, were good specimens of *Cymbidium Lowii* and a highly coloured spotted *Cattleya amethystoglossa*. Mr. F. Denning, gardener to F. A. Walton, Esq., Handsworth, was placed second, and in this lot we particularly noticed a good *Odontoglossum Rossi majus*. Mr. Cooper also staged, not for competition, a very interesting group of Orchids, the most noticeable of which were *Lælia flava*; a very fine variety of *Cattleya Trianae* with very dark lip; a beautiful light variety of *Calanthe Regnierii*; *Odontoglossum Andersonianum*; a well-bloomed plant of *Odontoglossum Phalanopsis* in a 3-inch pan; and a *Dendrobium eburneum* with a bright scarlet throat.

There was a capital display of Hyacinths, the first prizes respectively for eighteen, twelve, and six falling to Mr. Walter Jones, gardener to C. E. Mathews, Esq., Edgbaston. Mr. Jones is always a good cultivator, and this

year he had some formidable competitors, especially in Mr. J. Crook and Mr. J. Morgan. Mrs. C. Osler also staged a fine lot, which took the second prize for twelve. For six pots of single Tulips, of which several collections were staged, Mr. Jones carried off the first prize. Lilies of the Valley and Cinerarias were fairly well done, and there was a good display of these. Dielytras, Spiræas, and Deutzias are always well done there, so also are Cyclamens. Mr. Cooper was placed first and Mr. F. Denning second. The exhibitors came out strong in Azaleas, most of the specimens being not only large but so well flowered. Mr. W. Milward's six specimens were grand, and Mrs. Grice was a good second. For three Azaleas Mr. Cooper was first. The two specimen white Azaleas, which took the first and second prizes, respectively by Mrs. Grice and Mr. Cooper, were perfection in growth and flower. *Azalea mollis* now finds a place in the spring schedule there and is well represented, Mr. Cooper taking first honours. In the class for six stove and greenhouse plants Mr. Jones was again first, and had a very fine *Phaius grandiflorus*. Mr. Cooper was first for a good three plants.

Ferns, Palms, and miscellaneous plants are always well represented at Birmingham. It was too early for Auriculas, still a few good kinds were staged, such as Reed's Acme, George Lightbody, Maggie Lauder, and others. Only one lot of six Gold-laced Polyanthus were staged, and these came from Messrs. Pope & Son. Bouquets and epergnes are always done well there. Amongst the former one by Mr. Hans Niemand, of white Camellias, &c., *Kalmia latifolia*, and Starch Hyacinths and *Chionodoxa Luciliae* was much admired. Messrs. Pope & Son also exhibited a splendid bouquet not for competition. The same firm contributed a fine group of hardy Primulas in which were *P. marginata* and *P. obconica*, also a few good sorts of Auriculas.

The local nurserymen came out well in their exhibits. Mr. Spinks, the manager to Mr. Hans Niemand, staged a glorious group with a superb climbing Asparagus as a centre plant, flanked by Palms, &c. Several varieties of Daffodils, notably Sir Watkin and Horsfieldi, *Kalmia latifolia*, Lilac Charles X., Arum Lilies, *Chionodoxa Luciliae*, and a host of other plants were tastefully arranged. Messrs. Thomas Hewitt & Co. made up a bright and telling group with plenty of Azaleas and flowering plants, Palms, and other foliage things. Mr. R. H. Vertegans had interesting groups of Alpine plants, including boxes of *Narcissus Trumpet majus*, *Primula Cashmeriana*, and *Saxifraga oppositifolia*. Messrs. Thomson, the seedsmen, have recently purchased the late Mr. Tomkins' nursery, where Primulas Princess Louise and Marquis of Lorne and other fine sorts were raised, and on this occasion made their *débat* as plant exhibitors with a group of early-flowering plants and a magnificent cross and wreath. Mr. H. B. Smith, of the Ealing Dean nurseries, London, sent down about 200 pots of his Cyclamens, which were greatly admired, a specimen plant of *La Dame Blanche*, his new and very fine White, being amongst them. Altogether it was an excellent Show throughout.

THE ORCHID CONFERENCE.

THE following programme of the Orchid Conference, to be held at South Kensington May 12th and 13th, has been issued by the Council of the Royal Horticultural Society.

ORCHID CONFERENCE COMMITTEE.—Colonel Beddome, Hon. and Rev. J. T. Boscawen, J. C. Bowring, W. E. Brymer, M.P., the Right Hon. J. Chamberlain, M.P., John Day, W. T. Thiselton Dyer, F.R.S., Sir Nathaniel de Rothschild, Bart., M.P., Professor Michael Foster, F.R.S., Holbrook Gaskell, Geo. Hardy, E. Harvey, J. S. Hirst, Sir Trevor Lawrence, Bart., M.P., Wm. Lee of Downside, Major F. Mason, Rev. John B. Norman, Alex. Paterson, M.D., Fred. A. Philbrick, Q.C., Baron Schröder, and W. Thompson.

PROGRAMME OF THE EXHIBITION.

Class I.—Collections of Orchids in flower. With a view to economy of space, exhibitors are requested to show duplicates as little as possible.

Class II.—1, Species and varieties of the genera *Cattleya* and *Lælia*.
 2, " " genus *Odontoglossum*.
 3, " " " *Masdevallia*.
 5, " " " *Cypripedium*.

Class III.—1, Species and varieties of the genus *Oncidium*.
 2, " " " *Epidendrum*.
 3, " " " *Dendrobium*.
 4, " " " *Vanda*, *Saccolabium*,
Aerides, *Stanhopea*.

Class IV.—Single plants of any Orchid.

Class V.—Hybrid Orchids—*i.e.*, those raised by cross-fertilisation. It is hoped that the parents will be shown, if possible, with the hybrid.

Class VI.—Orchids in fruit.

Class VII.—1, Orchids indigenous to Great Britain. 2, Hardy Orchids from any other countries. 3, Cut flowers of Orchids.

In order to ensure uniformity and accuracy it is requested that the plants exhibited bear the labels which have been specially prepared for this Conference, and with which, through the kindness of Mr. Pollett, the Society is prepared to provide the exhibitors. Exhibitors are requested to apply for these at the Society's office on or before 1st May, giving the exact name of the plants which they intend to exhibit on the accompanying form.

Class VIII.—Materials, such as sphagnum and other mosses, peat and other soils, baskets, rafts, pots, pans, labels, &c., used in the cultivation of Orchids.

PROGRAMME OF THE CONFERENCE, WEDNESDAY, MAY 13TH, AT 10.30 A.M.

Introductory Remarks by the President.—1, Communication from Prof. Reichenbach. 2, Discussion on the Hybridisation of Orchids. Opening Paper by Mr. Harry Veitch, F.L.S. 3, Discussion on the Cultivation of Orchids. Opening Paper by Mr. J. O'Brien. 4, Discussion on the Nomenclature of Orchids.

Two Veitch Memorial medals will be awarded at the Conference on the recommendation of the Committee.

The Committee have arranged for a dinner in connection with the Conference, to take place at the Albion, Aldersgate Street, on Tuesday, May 12th, at 6.30 for 7 o'clock precisely. Gentlemen wishing to be present are requested to send their names to W. Lee, Esq., Downside, Leatherhead, on or before Friday, May 8th.

CHRYSANTHEMUMS IN APRIL.

MRS. C. CAREY.

I SEND flowers, buds, and old leafage of Chrysanthemum Mrs. C. Carey for inspection. This variety is by far the best forcing sort I have ever tried, the flowers coming full and good, and a continued supply of buds coming forward with unfailing regularity. We have been cutting from the same plants for the last ten weeks, every flower being removed as it became fully developed, others coming on to take the place of those cut. This requires a different treatment from that given to plants from which the flowers are not cut, and which are merely kept fresh on the plants for a longer or shorter period. The plants from which these flowers were cut are kept growing in a high stove temperature, and add another to the list of softwooded plants which are amenable to a course of treatment which insures the continued production of flowers so long as that treatment is pursued.—R. P. E.

[The flowers and foliage are as fresh as we usually see them in November, the sprays containing many buds in various stages of development.]

ORCHID NOTES.

Blinds for Shading.—In few gardens can houses be specially devoted to the different genera of Orchids. In the majority of cases one or two houses only can be set apart for them. This necessitates having Orchids needing warm and intermediate temperatures together, especially to make their growth, and even under such conditions very satisfactory results can be attained. The system of shading frequently adopted during the declining months of the summer is of much importance; in fact, this is a matter that affects the plants the whole season. Some require much more light than others, and it is rather difficult to remedy this state of things and provide for the well-being of all the occupants. The houses in which they are grown may vary in length from 25 to 50 feet, and it frequently happens that one blind on each side for houses of the former size is employed, and probably two for the latter. This system compels the cultivator to shade the whole house when a few plants require it, while the majority would be the better for a few hours' brighter light early in the day and again in the afternoon.

For a considerable time I have been considering how mixed collections could be best accommodated, and by what system of shading the greatest number of plants could be given the amount of shade most suitable for their requirements and development. The best and only way I can perceive of overcoming this difficulty is to have much smaller blinds; for instance, a house 25 or 30 feet in length might have two or three blinds on each side instead of one, and a 50 feet house four instead of two. By this method one portion can be more densely shaded if necessary. This will enable those in charge to arrange together the shade-loving plants under one pair of blinds, if the house is span-roofed, those requiring a little more shade next, while those requiring more light can be grouped at the opposite end of the house. In arranging blinds for the season this matter is worthy of consideration.

Slugs and Odontoglossums.—It is surprising how fond the slugs are of the flower spikes of these Orchids, and if they are not diligently sought for at this season of the year, young tender spikes will disappear with rapidity. Up to the present time we have been rather free from them after those had been exterminated that were imported with the sphagnum moss early in the year. Just now hundreds have mysteriously appeared and commenced their work of destruction. It is a very good plan when slugs exist in large numbers to damp well between the pots before leaving work at night, and then scatter between the pots abundance of fresh Lettuce leaves. The moisture is a great temptation to them to crawl out early upon the Lettuce leaves. If the whole is examined about 8 P.M. numbers will be caught, again at ten o'clock, and many that remain will be found beneath the leaves in the morning. Fresh leaves should be used every night, and by diligence the whole, or nearly the whole, may be exterminated in less than a week. Perhaps the best plan of all is to remove the pots containing the plants and scatter a good dressing of salt over the gravel or other material upon which the plants stand, and then wash it thoroughly in with boiling water. A strong supply of petroleum will do equally well, and if well washed down after it has been applied about an hour no harm will be done to the plants when they are returned. Either of these applications will destroy numbers of slugs, and those that are not killed will crawl out when it becomes dusk. The above with us has proved a satisfactory plan for destroying slugs in our cool Orchid house, not only slugs, but two or three dressings with either salt or petroleum and hot water also effect a clearance of woodlice.

Elevating Cool Orchids on Pots.—When cool Orchids are elevated upon small pots standing upon gravel or other moisture-holding material, the labour in keeping the pots clean is very great. In order to reduce labour in this respect wood trellises were made and elevated a few inches above the ground which surfaced the beds. The trellises did very well during the winter months, but in summer when evaporation was greater

they dried too quickly, and the plants evidently did not like the change. The trellises were removed and the plants placed upon the gravel; in this position they quickly improved, but experience points to the conclusion that they do better when elevated on small pots than when standing on the surface. When air is admitted at the side of the house it circulates more freely amongst the plants than can really be the case when stood upon the surface of the beds. Although these plants require large quantities of water at their roots they do not like it stagnating about them, and it appears to drain away from them much better when they are elevated. It would be useful if other growers would record their experience on this point.—L. D. W.

SPRING FLOWERS AT TOTTENHAM.

A RECENT visit to Mr. T. S. Ware's great collection of hardy plants at Hale Farm Nurseries, Tottenham, afforded an opportunity of seeing many choice novelties in bloom. No one but those who have made a personal inspection of these nurseries can form an idea of its many interesting features, especially in spring and summer. Mr. Ware has always some striking novelty to show his visitors, and on the occasion of our visit a few days ago we had the pleasure of glancing at a few of them. Among several bulbous plants growing in a cool house we noticed a couple of pigmy Narcissus in flower; one of them, *N. monophylla*, was a very chaste and pretty white form of the Hoop Petticoat section. It is, however, too delicate to grow without protection. Some fine clumps of *Triteleia uniflora* were flowering profusely in frames. *Iris reticulata* is another charming early-flowering plant, which certainly deserves to be more generally grown. A number were flowering in pots as well as in clumps on elevated positions of the rockwork. Its flowers are fragrant, and of a deep violet blue reticulated with yellow. Here and there, too, we saw bright little beds of various species of *Crocus*.

The rockwork was beginning to look attractive. Groups of such early-flowering genera as *Scilla siberica*, *Leucojum vernum*, *Iris reticulata*, *Arabis lucida*, *Iberis corifolia*, and *Hepaticas* were already in full blossom. The foregoing will be succeeded by many others which were rapidly throwing up myriads of buds. Numbers of *Hellebores* were still in flower, *H. subpunctatus* and *colchicus* taking the lead.

In some of the frames were a number of the charming *Saxifraga oppositifolia* and the variety *alba* in flower, the plants being covered with their chaste rose and white blossoms. Several members of the *Primula* family, such as *rosea* and *nivalis*, were also attractive. Anemones were also preparing for a brilliant display of blooms. In one of the houses *Iris fimbriata*, with its lovely pale blue fringed flowers; *Primula floribunda*, a delicate yellow; *Ornithogalum gracile*, a new species just throwing up its flower stems; *Lachenalias* in variety, and the pretty dwarf *Cyclamen Atkinsi*, were special objects of interest. Frames, houses, as well as beds and borders, abound with hundreds of thousands of hardy alpine, herbaceous, and florists' flowers, grown to supply the demands of lovers of hardy plants in all parts of the world.

In one of the cold frames a comparatively little known alpine Buttercup, *Ranunculus anemonoides*, was very pretty. It was growing in a pan as shown in the engraving (fig. 49), and in this way is seen to excellent advantage. The flowers are white, neat in form, and the leaves are much divided, like some of the Windflowers, and to this it owes its specific name. It succeeds in a cold frame in light well-drained soil, but would probably thrive equally well on a rockery in sheltered positions. It is unquestionably a charmingly graceful little plant.

LIVERPOOL SPRING SHOW.

MARCH 24TH AND 25TH.

THE third spring Exhibition of the Liverpool Horticultural Society was held in St. George's Hall, and was in many respects superior to its predecessors. The display of flowers was perhaps the finest that has been seen in the Hall for some years; in fact, flowering plants were too abundant, and the Exhibition would have been improved by the addition of more foliage plants. There was no falling-off in the number of exhibits of that character, but it was due to the miscellaneous exhibits of local nurserymen, who on previous occasions have staged a fair proportion of foliage plants. But the flowering plants exhibited by them on this occasion formed an exhibition alone.

Stove and Greenhouse Plants.—These were as numerous and as good as during previous years. For six plants, three flowering and three foliage, Mr. W. Mease, gardener to C. W. Newmann, Esq., Wyncote, Allerton, was first with large well-grown plants, comprising *Croton Disraeli*, a fine well-coloured plant 7 or 8 feet in diameter; *Croton Weismanii*, about the same size and in superb condition; *Areca lutescens*, large and healthy; *Imantophyllum miniatum maximum*, a fine variety and a splendid specimen; *Rhododendron Victor Regina*, large and profusely flowered; the remaining plant being *Chorozema cordatum splendens*, about 6 feet in diameter, and covered with flowers. Mr. J. Jellico, gardener to T. H. Gossage, Esq., Camphill, Woolton, was placed second with very creditable plants of *Croton*

Hawkerii, *Latania borbonica*, *Pritchardia pacifica*, both being large specimens; *Acacia armata*, a large well-flowered plant; *Anthurium Schertzerianum*, and a large *Azalca Reine des Pays Bas*. Mr. A. R. Cox, gardener to W. H. Watts, Esq., Elm Hall, Wavertree, took the remaining prize with small but neat plants. For one stove plant in flower the prize-winners were Messrs. W. Mease; Moss, Mossley Hill; and A. R. Cox. In the corresponding class for one greenhouse plant in bloom Mr. J. Lowndes, gardener to S. S. Parker, Esq., took the lead with a very fine specimen of *Chorozema cordatum splendens*; Mr. James Hurst, gardener to W. B. Bowering, Esq., Beechwood, Aigburth, second with *Erica Wilmoreana*, between 3 and 4 feet through, well bloomed, but a little past its best. For one foliage plant Mr. W. Mease was first with a grand *Croton Prince of Wales*; Mr. W. Evans, gardener to Mrs. Locket, Grassendale, Aigburth, second with *Cycas revoluta*; and Mr. J. Jellico third with *Dracæna Veitchii*.

For a group of miscellaneous plants arranged for effect, semicircular, and not to exceed a space of 50 feet, there were three competitors. Mr. A. R. Cox gained the premier award for the most effective arrangement, which included miscellaneous flowering and foliage plants, the latter being well elevated. The second-prize group staged by Mr. W. Mease probably contained the choicest plants, but was scarcely so light in appearance. Mr. J. Jellico was awarded the remaining prize for an even and much more formal arrangement.

Ferns and Palms.—Ferns were not numerous, but the exhibits were

Bustard, gardener to J. Lewis, Esq., St. Ann's Road, Aigburth, was awarded the remaining prize for less even plants. With four plants in the amateurs' class Mr. A. Crosbie was first, having small but neat well-flowered plants of *Amœna Duc de Nassau* and *Souvenir de Maximilian*. Mr. J. Gowen, gardener to J. Cunningham, Esq., Linton Lodge, Mossley Hill, second with large plants not so well flowered, and third Mr. C. Copple, seven collections being staged. For three plants Mr. J. Lowndes was to the front with conspicuous plants of large size and most profusely flowered, the varieties being *Stella*, *Duc de Nassau*, and *Reine des Pays Bas*. Mr. W. Mease was a good second and T. Gowan third with fair plants. For one plant Mr. A. Crosbie was first with a fine specimen of *Alba plena*, Mr. Lowndes second with *Fielding's White*, and Mr. Gowan third with *Virgin Queen*. The two classes devoted to *Azalea mollis* brought a number of exhibits which were of fair size and profusely flowered; the winners with four plants being Messrs. W. Mease, J. Lowndes, and W. Bustard. For one specimen the same competitor was again first, followed by Messrs. J. Hurst and J. Lowndes in the order named.

Forced Plants.—For six plants Mr. W. Mease gained the leading position, followed closely by Mr. J. Hurst and Mr. A. Crosbie, some six or seven collections being staged. The first-prize collection contained a profusely flowered specimen, rather too closely trained, of *Wiegela amabilis*, a large *Rhododendron Madame Wagner*, *R. Everestianum*, also large; *Deutzia gracilis*, 4 feet in diameter; *Azalea pontica*, a large well-flowered example, and



FIG. 49.—*RANUNCULUS ANEMONOIDES*.

large and well-grown specimens. For four plants only two collections were staged. Mr. G. Rhodes, gardener to Mrs. Horsfall, Grassendale Priory, Aigburth, was deservedly placed first with *Dicksonia antarctica*, *Alsophila Moorei* very fine, and *Gymnogramma chrysophylla*. Mr. C. Jones, gardener to F. Medley, Esq., obtained the second award, his finest plant being *Davallia dissecta*, from 3 to 4 feet over. For one plant Mr. W. Evans was well first with a most magnificent pan of *Goniophlebium subauriculatum*; Mr. G. Rhodes being placed second with a plant of *Davallia Mooreana*, about 8 feet through; Mr. C. Copple third with the same variety as the first prize exhibitor. For one Tree Fern the prizewinners were Mr. W. Grantham, gardener to R. Young, Esq., Sefton Park, and Mr. C. Jones, both staging good healthy plants of *Dicksonia antarctica*.

Palms were not numerous, but those that were staged were large and in good condition. Mr. W. Mease took the lead for three with his well-known plants; Mr. J. Hurst second; and Mr. A. Crosbie, gardener to B. Hall, Esq., third. With one plant the prizetakers were Messrs. J. Hurst, A. Crosbie, and J. Jellico.

Azaleas.—A great feature of the Exhibition was formed by these, and they were not only better flowered, but in much better condition generally and more numerous than we have before seen them in the Hall. For six plants Mr. W. Mease took the lead with large evenly trained well-flowered plants of *Souvenir de Prince Albert* very fine, *Iveryana*, *Madame Vervaene*, *Dieudonné Spae*, *Grandis*, and *Flower of the Day*. Mr. William Evans followed with larger but scarcely such well-flowered examples. Mr. W.

A. amœna. The most striking plant in the second collection was a well-flowered specimen of *Clematis Lady Neville*, about 4 feet across and covered with its large flowers, other notable plants being *Rhododendron Columbus* and *Azalea hybrida odorata*.

Table Plants.—As usual these were good, Mr. J. Hurst taking the lead for six plants, followed by Mr. W. Mease and Mr. W. Bustard. The first collection contained *Croton interruptus aureus*, *Aralia Veitchii*, *Pandanus Veitchii*, *Dracæna gracilis*, *D. superba*, and *Cocos Weddelliana*. For three plants the competition was close, the successful exhibitors being Messrs. W. Evans, C. Copple, and A. R. Cox.

Callas were a new feature, well-grown specimens being staged. For three plants Mr. J. Jellico was first with capital examples, Messrs. W. Evans and G. Rhodes being second and third respectively in the order named.

Cyclamens, on the whole, were very good, especially the first-prize plants, which were of large size and profusely flowered, the flowers being of a large size. For six plants Mr. W. Wilson, gardener to H. Cunningham, Esq., Gorsc Cop, Gateacre, was the most successful exhibitor, followed by Mr. J. Jellico and Mr. E. Green, both staging creditable examples.

Only three competitors staged plants for the six prizes offered for *Mignonette*. Mr. E. Warton, gardener to A. Dixon, Esq., Mansfield, Seaforth, was successful with two pyramids; Messrs. W. Evans and J. Hurst with two standards, the three exhibits being very good.

Primulas were not extra fine, and with the exception of the first-pr

Beech. This determines the width, and by compelling the leaf to lengthen itself leads to the peculiar form which it assumed. Moreover, not only do the leaves on a single twig admirably fit one another, but they are also adapted to the ramification of the twigs, and thus avail themselves of the light and air, as we could see by the shade they cast without large interspaces or much overlapping. In the Sycamores, Maples, and Horse Chestnuts the arrangement is altogether different. The shoots are stiff and upright, with leaves placed at right angles to the plane of the branch, instead of being parallel to it. The leaves are in pairs and decussate with one another, while the lower ones had long petioles which brings them almost to the level of the upper pairs, the whole thus forming a beautiful dome. For leaves arranged, as in the Beech, the gentle swell at the base is admirably suited, but in a crown of leaves, such as those of the Sycamore, space would be thereby wasted, and it is better that they should expand at once, as soon as their stalks had carried them free from the upper and inner leaves. Hence we see how beautifully the whole form of these leaves is adapted to the mode of growth and arrangement of the buds in the plants themselves.

In the Black Poplar the arrangement of the leaves is again quite different. The leafstalk is flattened, so that the leaves hang vertically. It would be observed that, while in most leaves the upper and under surfaces are quite unlike, in the Black Poplar, on the contrary, they are very similar. The stomata, or breathing-holes, moreover, which in the leaves of most trees are confined to the under surface, are in this species nearly equally numerous on both. The Compass Plant of the American prairies, a yellow Composite, not unlike a small Sunflower, is another plant with upright leaves, which growing in the wide open prairies tends to point north and south, thus exposing both surfaces equally to the light and heat. It was shown by diagrams that this position also affected the internal structure of the leaf.

In the Yew the leaves are inserted close to one another, and are long and linear, while in the Box they are further apart and broader. In the Scotch Fir the leaves are linear, and $1\frac{1}{2}$ inch long; while in other Pines, the Weymouth for instance, the stem is thicker and the leaves longer. In the plants hitherto mentioned one main consideration appeared to be securing as much light as possible; but in tropical countries the sun was often too powerful, and the leaves, far from courting, avoid the light. The typical Acacias had pinnate leaves, but in most Australian species the true leaves are replaced by a vertically flattened leafstalk. It would be found, however, that the seedlings have leaves of the form typical in the genus. Gradually, however, the leaf becomes smaller and smaller, until nothing is left but the flattened leafstalk or phyllode. In one species the plant throughout life produced both leaves and phyllodes, which gave it a very curious and interesting appearance. In Eucalyptus, again, the young plant has horizontal leaves, which in older ones are replaced by scimitar-shaped phyllodes. Hence the different appearance of the young and old trees which must have struck every visitor to Algiers or the Riviera. So much for deciduous trees.

In evergreens the conditions are in many respects different. It is generally said that leaves dropped off in the autumn because they died. This, however, is not strictly correct. The fall of the leaf is a vital process, connected with a change in the cellular tissue at the base of the leafstalk. If the leaves were killed too soon they do not fall. The lecturer illustrated this by some twigs which he had purposely broken in the summer; below the fracture the leaves had been thrown off, above they still adhered, and so tightly that they could support a considerable weight. In evergreen trees the conditions were in many respects very different. It is generally supposed that the leaves last one complete year. Many of them, however, attained a much greater age; in the Scotch Fir three or four years; in the Spruce or Silver six or seven; in the Yew even longer. It followed from this that they require a tougher and more leathery texture. When we had an early fall of snow our deciduous trees are often much broken down; glossy leaves had a tendency to throw it off and thus escape; hence evergreen leaves were very generally smooth and glossy. Again, evergreen leaves often have special protection, either in an astringent or aromatic taste, which rendered them more or less inedible, or by thorns and spines. Of this the Holly is a familiar illustration, and it was pointed out that in old plants, above the range of browsing quadrupeds, the leaves tend to lose their spines and become unarmed. The hairs on leaves are another protection. On herbs the presence of hairs is often associated with that of honey, as they protect the plants from the visits of creeping insects. Hence, perhaps, the tendency of water species to become glabrous, *Polygonum amphibium* being a very interesting case, since it is hairy when growing on land, and smooth when in water.

The lecturer then dealt with cases in which one species might be said to mimic another, and he exhibited a striking photograph of a group of Stinging Nettles and Dead Nettles, which were so much alike as to be hardly distinguishable. No one could doubt that the Stinging Nettle was protected by its poisonous hairs, and it was equally clear that the innocuous Dead Nettle must profit by its similarity to its dangerous neighbour. Other similar cases were cited. Reference was next made to aquatic plants, many of which had two kinds of leaves, one more or less rounded, which float on the surface, and others are cut up into narrow filaments, which remain below. The latter thus present a greater extent of surface. In air, however, such leaves would be unable to support even their own weight, much less to resist any force such as that of the wind. But in perfectly still air, for the same reason, finely divided leaves might be an advantage, while in comparatively exposed situations more compact leaves might be more suitable. It was pointed out that finely cut leaves are common among low herbs, and that some families which among the

low and herb-like species had such leaves, in shrubby or ligneous ones had leaves more or less like those of the Laurel or Beech.

An interesting part of the subject is connected with the light thrown by the leaves of seedlings. Thus the Furze has at first trifoliate leaves, which gradually pass into spines. This showed that the Furze was descended from ancestors which had trifoliate leaves, as so many of its congeners had now. Similarly, in some species, which, when mature, have palmate leaves, those of the seedling were heart-shaped. Perhaps in all cases the palmate form is derived from the heart-shaped, and when in any genus we found heart-shaped and lobed leaves, the former might represent the earlier or ancestral condition. If there is some definite form told off for each species, then surely a similar rule ought to hold good for each genus. The species of a genus might well differ more from one another than the varieties of any particular species; the generic type might be, so to say, less closely limited; but still there ought to be some type characteristic of the genus. One genus is that of *Senecio* (the Groundsel). In addition to *Senecios* more or less resembling the common Groundsel, there were species with leaves like the Daisy, bushy species with leaves like the Privet and the Box, small trees with leaves like the Laurel and the Poplar, climbing species like the *Tamus* and *Bryony*. In fact, the list was a very long one, and showed that there was no definite type of leaf, but that the form in the various species depended on the condition of the species. From these and other considerations the lecturer concluded that the forms of leaves do not depend on any inherent tendency, but to the structure and organisation, the habits and requirements of the plant. Of course it might be that the present form had reference to former, and not to present conditions. This rendered the problem all the more complex and difficult. The subject presents a very wide and interesting field of study, for if he were correct in his contention, every one of the almost infinite form of leaves must have some cause and explanation. The lecture, illustrated by numerous diagrams and specimens, was listened to with considerable interest.—(*The Standard*.)

FIXING RAIN GAUGES.

ONE of the first essentials in meteorology is uniformity; in fact, it might be described as not only one of the first, but as the first, for without

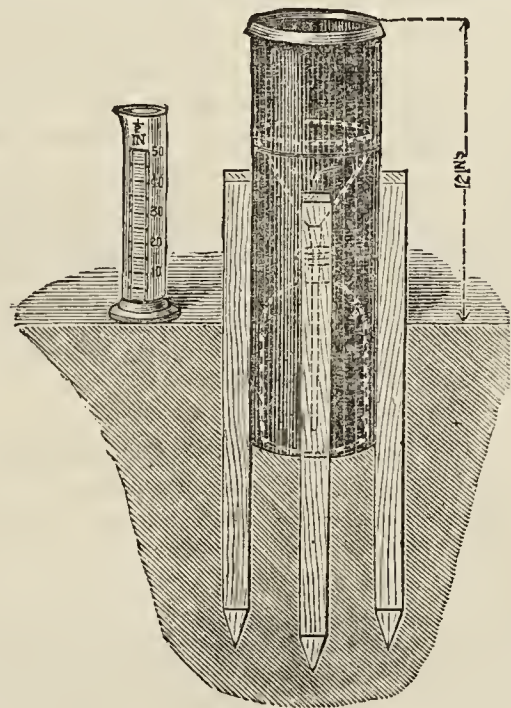


Fig. 50.

it comparisons are impossible. Hence chiefly it is that I find myself reluctantly obliged to protest against the somewhat tempting arrangement of rain gauge and thermometer stand drawn by Mr. Inglis in your issue for March 12th (page 219).

Experiment has shown that every foot that a rain gauge is raised above the ground causes it to collect less rain; we require to know the amount which reaches the ground, and therefore gauges are placed as near thereto as is practicable. At one time their orifices were often only 2 or 3 inches above the ground, but it was proved that gauges so placed collected too much, because rain and hail splashed in from the surrounding ground. Hence the height of 1 foot was adopted, and at the present time there are at least 1700 rain gauges in this country so fixed. I leave it to your readers to judge whether overwhelmingly strong reasons must not be produced before it can be advisable to break up such a splendid approach to uniformity.

There are other minor matters in Mr. Inglis's sketches to which I am obliged to take exception. The funnel, for instance, is too shallow to hold more than an inch or so of snow; all good gauges are now provided with what are known as Snowdon funnels (see sketch)—*i.e.*, with a short cylinder—which enables them to retain any moderate amount of snow. Again, the joint where the funnel passes through the lid C in fig. 39, just above the letter D, is sure to prove a source of trouble; a few seasons of sun, wet, and frost will make it leaky, and though in the engraving there is the representation of what is known as an umbrella—*i.e.*, an arrangement for throwing such leakage outside the bottle—I know that in prac-

tice many records are vitiated by unsuspected leakage of that kind. One such I detected myself less than a month since. Lastly, I prefer the bottle being in a well-made metal receptacle, so that in the event of the water freezing and bursting the bottle the contained water is not lost nor the continuity of the record impaired. For all these reasons I adhere to the form of gauge and of mounting represented in the engraving (fig. 50). As regards cost, it is about the same as Mr. Inglis states, but a perfectly accurate gauge of the pattern here shown is made in galvanised iron with a stout brass-rim measuring glass and all complete for 12s. 6d.

Concerning the thermometers, I can only say that thermometers placed as shown would not give results comparable with those published by the Royal Meteorological Society for the following reasons:—(1) The Society, after many experiments, found that it was better to have the bulbs 4 feet above the ground than at any other height; (2) the sun will get slightly on the thermometers in early morning and late evening in summer; (3) if a gravel path leads to the stand the thermometers will read too high, owing to heat striking up from the path, and this will be extremely marked if they are as represented less than 2 feet above it.

I hope that no reader, not even Mr. Inglis himself, will consider that I feel other than most kindly to him. He and I have one common object—that of obtaining accurate records of rainfall and of temperature. If every garden were equipped as Mr. Inglis suggested it would be a grand help to the work to which I have devoted my life, but surely that is no reason why I should not mention how I think that it might be made even better.—G. J. SYMONS, F.R.S.

GLASGOW AND WEST OF SCOTLAND HORTICULTURAL SOCIETY.

THE Spring Show of this Society was recently held in St. Andrew's Hall, and proved to be the most attractive and largest that has taken place for a number of years. Local nurserymen showed very well. Mr. Austin McAslan adorned the platform with numerous flowering plants and some very fine Japanese Maples. Messrs. Smith & Simons filled a table 24 feet by 6 with fine Palms and Azaleas. Messrs. J. & R. Thyne exhibited floral wreaths, crosses, and bouquets of the choicest Orchids, arranged with the most exquisite taste. Mr. McKenzie, Paisley, had some fine bouquets of Roses and a splendid collection of Dutch bulbs in bloom, filling a table 24 feet by 6. The first place for a collection of plants was taken by Messrs. J. & R. Thyne. This table was most artistically arranged, highly coloured Crotons, graceful Palms, and rare Orchids, with Lily of the Valley and Maidenhair, making the neatest table that could be arranged. J. L. Henderson, Esq., Partick, was second, conspicuous in his collection being a magnificent Cordyline indivisa, a splendid Palm, and some good Cycads. The bulbs were splendid and very numerous, Messrs. McKenzie and J. Sutherland, Lenzie, taking the open prizes.

In the gardeners' classes for Hyacinths the prizes for twelve, nine, and six were all carried off by Mr. J. Buchanan, gardener, Kincaid; and similar honours in Tulip classes were taken by Mr. Heron, gardener, Pollokshaws. The Tulips were splendid specimens. Mr. Hogg, gardener, Aitkenhead, took the lead with stove and greenhouse plants, Azaleas, and vegetables, his Azalea amœna being in grand condition. Rhododendron Countess of Haddington was also wonderfully well grown and flowered. A splendid specimen of Dendrobium speciosum was exhibited by Mr. Fleming, Garscube, having twenty-one spikes of blooms.

THE GERMINATION OF SEEDS.

(Continued from page 151.)

[A lecture delivered before the Institute of Agriculture, South Kensington, March 31st, 1884, by Professor G. T. Bettany, M.A., B.Sc., F.L.S. Published by Messrs. Chapman & Hall.]

Now why have I introduced this matter of the loss of weight in germination in this place, notwithstanding that the starchy constituents of the seed are believed to furnish a great part of the material which is lost in this way? It is because I wish to emphasise what is the controlling influence in this oxidation—this respiration. Notwithstanding that the starch may yield the fuel for this burning or oxidation, the oxidation would not take place but for the activity of nitrogenous living substance. The starch might remain long in contact with water without undergoing such oxidation. It is the living substance in which is the fire, which is, in fact, itself the fire beginning to build up and tumble down as soon as it gets to work, and in that tumbling down, wasting, grinding itself down, so to speak, and by its very activity drawing towards it fresh fuel, fresh food, just as surely as the busy activities of the populations of great cities draw to them perpetually renewed stores of beef and milk. Consequently, we find that as soon as the seed begins to germinate, the starch which it contains begins to be dissolved. The starch is simply one of the resting states of that kind of body known as the amyloids, or the carbohydrates, in which the hydrogen and oxygen are present in the same proportion in which they are in water, not in the form of water, but in a very much more condensed form.

The change which the starch undergoes is something more than solution. True, the starch is dissolved; it disappears. But if it still remained chemically the same it would not pass through cell-membranes. It is very noteworthy, in connection with the chemical structure of starch, that the change which is necessary to enable it to take a diffusible form, in which it can pass from place to place in the plant, consists in the addition of a molecule of water to its constitution, whereby sugar is formed. But this change does not ordinarily take place without the development of a special ferment which acts the part of a beneficent busybody, setting afoot and keeping in activity the transformation. An important ferment of this kind is *diastase*, which is tolerably well known to occur in malt; but numerous others are known. Diastase, however, is that which has been most completely isolated, and its effects most carefully studied: and it has been found that one part of diastase can convert 2000 of starch by weight into

soluble products in a few minutes, supposing an acid is present. This ferment diastase has been proved to occur in Oats, Wheat, Maize, and Rice. In a certain experiment 76 parts of cold starch paste were taken and four parts of ferment solution added. In two minutes there was a complete solution of the grains. In half an hour no more reaction with iodine could be obtained, showing that starch was completely absent. The solution then contained 45 per cent. of sugar. Formic acid is the acid most favourable to this process, and this acid is readily formed by the oxidation of starch itself, great part being given off as carbonic acid and water, while the remainder becomes formic acid.

There is now reason to believe that the starch so converted into sugar is the principal food of the protoplasm, becoming available for continually building it up anew. It is singular that the plant in germinating does not lose any appreciable quantity of nitrogenous compounds; these keep pretty much the same, although we have evidence that the compounds themselves are continually changing. The bodies which diminish during germination are the starchy bodies, whose products, carbon and water, can be and are given off. Maize germinated twenty days in darkness decreased in dry weight from 130 to 70 grains, the starch and dextrin having diminished from about 100 to 10 grains.

But it may be asked, What is the condition of germination in those seeds which do not contain starch, but only very thick cell-walls of cellulose like the Date stone? The cellulose perfectly replaces the starch, and becomes in its place the food of the little germ. It becomes dissolved and transformed by a ferment, and actually starch is manufactured in the process, being very near to cellulose in chemical composition. A similar fact has been discovered in the germination of those seeds which contain much fat and oil, though there is this difference, that in order to produce starch and sugar by the transformation of fat, a much greater quantity of oxygen must be combined with the fat, and associated with this there is much formation of carbonic acid and water. During this active change, as in the Date, starch appears in a solid form, temporarily, though not present in the ripe seed. The importance of the availability of fat being proved is shown by the fact that no seeds are quite without fat; in Wheat and Oats the fat is 2 per cent., in Maize 5 to 8 per cent., in Linseed 30 per cent., in Rape 40 to 50 per cent.

I will not refer to the temperature of germination, but this is of the less importance, because practically we are not able in farming operations to control this. We all know the unfavourable influence of frost on germination. Many seeds germinate very quickly under favourable circumstances, especially Cruciferæ and Grasses. But the period varies in the same species under apparently identical conditions. The greatest longevity appears to appertain to the Peas and Beans—fifteen years; but practically three years is the limit within which you may expect the great bulk of seeds to germinate. Still, the extensive keeping of seeds for three years is not to be recommended, as the natural period of germination is the year after the ripening of the seed. But it is valuable to keep stores of the seed of various years in case of failure in subsequent years.

As to the relative value of larger and smaller seeds I may be allowed to say a few words. The larger seeds in general produced by a given plant have a stronger germination, and thus have a greater vitality. In the case of Beans and Peas, in large seeds the lengths of root-axis were in the proportion of 150 to 130 produced by smaller seeds. The same is the case with the number of root-fibres and the length of stem. This advantage in germination continues till the plant is fully developed. It is a good start, and leads to the production of a better stem, more seeds and better seeds. In the larger seeds of Peas and Beans it is the cotyledons which are the largest. The roots of the larger seeds penetrate with greater ease into the deeper layers of the soil. They may also be buried or sown deeper in the soil than smaller seeds. In every way it is advisable to sow the heaviest and largest seeds you can get.

I have thus given a brief outline of the processes which occur in the germination of plants. The result of the processes is of undoubted interest—namely, the development of healthy young plants. It is very striking that with the exception of water the young germinated plant derives nothing from the soil, and with the exception of oxygen nothing from the air. How important, then, are the due breaking-up of the soil that oxygen may have free access, and the supply of water. The knowledge of the composition of seeds and the changes which take place in their constituents during germination, may be of service to all who wish for an intelligent comprehension of processes they see every day going on around them. They may show the reason for a choice of large seeds and the utility of microscopical and chemical examination of seeds. The fact of highest interest to a biologist, however, is perhaps the close parallel which is found to exist between digestion in animals and the conversion of the food stored up in seeds into materials available for feeding the growing germ. Thus we see exemplified—the unity of life, the similarity between the early stage of a seedling and the adult form of the highest animal, the proof that plants as well as animals digest their food, and that the distinctions between them are but minor compared with the great and fundamental bonds which unite them.

ALEYRODES VAPORARIORUM.

GARDENERS have numbers of enemies to contend with, and they need be good-tempered men. Among the many insect pests that frequent our plant and fruit houses, the one most difficult to exterminate, *Aleyrodes vaporariorum*, first became troublesome when it became the fashion to grow Tomatoes under glass, and it seems to find its way to wherever they are grown. Unfortunately it does not confine its attention to Tomatoes, but will exist and rapidly increase on various other plants. There is no need to describe it, as only too many of us are well acquainted with this little white fly. It is far from being nearly or quite stationary like other insect pests, as if we only tap an infested plant they rise in a cloud, hence I suppose its pretty distinctive name. This renders it difficult to be destroyed, as soluble insecticides only reach a few, and as soon as we commence fumigating they seem to understand what is coming, and quietly drop to the ground, to return to their old quarters in the course of a few hours.

At the same time frequent fumigation is the only method of exterminating them in the case of an attack on many large plants. If we could destroy all there are on the wing at a fumigation we must still repeat it in a few days, as a considerable number are always being hatched out. They ought never to be allowed to get well established, and the best preventive has only recently been pointed out to me. Tobacco powder is the remedy, this being dusted on the affected parts (almost always the under side of the leaves) and allowed to remain on. In no case has this failed to clear the plants, as it proves destructive to old and young alike, and in no case has it done any injury owing to its being left on the plants. Young Fuchsias are very easily injured by insecticides, and even excessive fumigation, but we have cleared them of the Aleyrodes without the plants dropping a leaf. Let me, then, advise all who have only a few Tomato or other plants infested to try the tobacco powder, and be thankful that they have such a simple remedy at hand.—W. IGGULDEN.



KITCHEN GARDEN.

Broccoli.—The whole of the Broccoli seed should now be sown. Beginners do not often understand that Veitch's Self-protecting variety, which heads in November, should be sown at the same time as Sutton's Late Queen, which heads the following April and May, but such is the case. We sow all our Broccoli on a narrow border along the side of one of our kitchen garden walks, and they always do well there. The seed is sown in rows about 10 inches apart, and remain there until they are about 6 inches high, when they are drawn and dribbled into the bearing quarters. The seed should be sown thinly and about 1½ inch in depth. As healthy young plants are always the best, the soil in which they are raised should be rich and good.

Asparagus.—Now is the best of all times to make new plantations of this. We have lost many young plants by transplanting early in March, and others put in in May have been so much checked that they were almost killed, but the greatest success attends the planting early in April. Where roots are brought in from a nursery have the ground perfectly ready for their reception before they come, and on their arrival plant without delay, as the roots are very fleshy and are soon injured by exposure to the atmosphere. Heavy stiff soil does not suit Asparagus, but it does admirably in medium soil which has been well enriched with good manure. Ordinary garden soil often produces fine Asparagus, but almost all kinds of soils will grow it better if a quantity of river sand, wood ashes, and charred refuse is dug in before planting. Choose a fine day for planting. Open the holes wide enough to admit the roots freely, make them about 4 inches deep, and as each root is put in cover with fine soil. Tread the soil firmly round them, but not over the top of the plant. When the young growths are pushing forth do not rub them off. Careful planting will advance growth wonderfully. Some believe in elaborately cut beds for Asparagus, but we do not, as we find it succeed equally well planted on the level row-after-row system, and much space is saved in this way. We have about a quarter of an acre of Asparagus growing in this way in our garden, and every spring we are complimented on its excellence.

Herbs.—The whole of these should be taken in hand. Throw some good manure over Mint beds, fork more in between the rows of Sage, Thyme, &c. Where seedling plants are crowded lift and replant at a greater distance. Sow Chervil, Thyme, Sage, &c., in the open, and Sweet Basil under glass. They are all easily raised from seed, and a little of each should be sown annually where there is much demand for good herbs. Good soil and an open situation will favour their perfect development.

Potatoes.—Proceed with the planting of these. Main crop and late varieties too may be planted with advantage from now until the middle of April. We have tried our main crops planted very closely together in the rows, and there is nothing to be gained by this. As a rule we plant our Potatoes 3 feet between the rows and 18 inches between the sets, and have a row of Broccoli, Brussels Sprouts, Savoys, or some winter crop between, excellent crops of all being secured in this way. Do not destroy the young shoots which are being emitted from the tubers, and plant them about 3 inches below the surface. Early Potatoes should have the soil drawn up to or over the shoots for protection, and a few spruce branches may be placed against the large ones. As frames are cleared of new Potatoes level the soil and sow Vegetable Marrow seeds over the surface. Small Cauliflowers may also be dibbled in.

Kidney Beans.—Throw away old plants as soon as the pods have been gathered. When they are kept on carelessly they will soon be covered with red spider, and may ruin Vines, Peaches, or other plants. Support those bending down under a heavy crop with small twigs. Give abundance of liquid to all coming into flower or fruit. Sow a large batch to precede those which will be first gathered in the open. They need not be put into a hothouse, but will do in a close frame. Make a small sowing of a dwarf variety in a very sheltered position out of doors. Do not sow more than 2 inches deep, and cover with light sandy soil.

Carrots.—Hoe between the early plants now showing on the borders. Thin out advancing crops in frames. Never allow them to suffer from overcrowding. Sow the main crop of James's Intermediate. Friable moderately rich soil free from grubs, and 18 inches deep at least, should be chosen for this important crop. Open the drills 15 inches apart and 1½ inch deep. Sow thinly and cover with a light dry soil in which a quantity of soot has been mixed.

Beetroot.—It is still too soon to sow the main crop, but a few rows for the earliest supply should be put in. It will succeed admirably if placed at the end of the Carrot plot, and it may be sown in all respects the same, but the soot need not be included in the soil.

Cauliflower.—Earth up the plants which were put out from frames some time ago. Plant out those which have been raised from spring-sown seed under glass. Make a general sowing of late varieties with the Broccoli. Where worms are likely to disturb the plants by eating the roots sprinkle soot round the stems and let the rain wash it down.

Tomatoes.—Give those plants now maturing their crop abundance of liquid manure. Pot those which are being reared for open air culture; 6-inch pots are large enough for them to occupy before being planted out. Use nothing but loam as a rooting material. To give them much manure when young only produces soft unfruitful wood. Do not allow plants intended for the open to be drawn up under glass and in strong heat. Those to be fruited in pots and boxes should not be allowed to become root-bound until they occupy their largest pots.

Winter Spinach.—Do not throw away this until that sown in spring is ready. If the ground between the old rows is hoed and cleaned the plants will give much useful produce for some time to come.

FRUIT FORCING.

FIGS.—Earliest Trees in Pots.—Trees of Early Prolific and Early Violet that were started in gentle bottom heat will now or soon take their last swelling; and as this is the most critical stage in Fig culture, checks of all kinds, especially that consequent on irregular watering, must be carefully guarded against. To insure flavour a rather drier and somewhat higher temperature is essential, but it should be sought chiefly on fine days with increased ventilation, and withholding water must be gradual. The soil must be thoroughly soaked with water a few degrees warmer than the bed into which the trees have pushed their roots, and then place some light mulching on the surface. Brown Turkey and Negro Largo are not quite so forward as Early Prolific and Early Violet started at the same time, but they are not much behind, and should have good liquid manure twice a week, being syringed well twice a day on fine days, and once when the weather is dull. Let every part of the foliage be thoroughly wetted, being careful to let the second syringing take place in time for the leaves to get fairly dry before night. The night temperature may be kept at 65° when the weather is mild, 70° to 75° by day artificially, and between 75° and 85° when the days are sunny, as the Fig likes plenty of heat, with light and full exposure to sun. Keep the stopping and thinning of side shoots well in hand, and train terminals forward where space remains unfilled, and where it will not cause crowding or shade of the fruit.

Trees Planted Out.—Large trees in inside borders will require generous treatment in liberal supplies of water and mulching with good manure. Syringe the trees twice a day, damp the paths and walls frequently, and keep the mulching constantly moist. Ventilate freely through the early part of the day, and close with a brisk moist heat not later than 3 P.M. Stop the side shoots at the fifth joint, and lay in young growth where there is space, but avoid overcrowding, as the Fig needs plenty of light, and this will insure sturdy short-jointed growth, and the fruit will be the best in colour and flavour where most exposed to the influence of sunshine.

Trees in Unheated Houses.—In any situation Figs do better under glass than against walls, and in cold low situations a house with a south aspect is essential to insure a crop of well-ripened fruits. The trees should be planted in narrow borders, well drained, with a compost of turfy loam, with a sixth in equal proportions of road scrapings and old mortar rubbish, the border being 24 to 30 inches deep, and put together firmly with any addition of manure. Instead of planting the trees in front and training them up the roof, plant at the back and train up the back wall and then downwards under the glass, and not more than 14 inches from it. The principal art of management is to keep them dry during the winter, and dormant as late in spring as possible. The growths should be kept thin and neatly tied in through the summer, towards the end allowing more freedom, which will cause the ends of the shoots to draw up to the glass and be ripened by the warmth. When the leaves have fallen the borders must be covered with dry fern or litter, and protection given to the branches in severe weather, as they are liable to suffer in case of severe frost. The trees should have single stems, the best varieties being Brown Turkey, Negro Largo, and, if a white one be wanted, White Marseilles.

MELONS.—There must not be any neglect in stopping, thinning, and tying the shoots, as if these matters are not attended to regularly the shoots will become overcrowded, and the energies of the plants will be wasted instead of concentrated on the development of the fruit and the consolidation of the necessary wood and foliage. The plants swelling their fruits will need a good supply of water at the roots, which should be given of a somewhat higher temperature than that of the bed; and if grown in narrow or shallow borders, and where drainage is ample and the bottom heat steady at about 80°, tepid liquid manure may be given in a weak state. More especially will this be advisable in the case of plants growing in pots or boxes. Ventilate early and in accordance with the

state of the weather, keeping the temperature through the day at 75° to 85° from sun heat, closing at 85° to 90°, and if the temperature rise to 95° it will help to swell the fruit quickly to a good size. There must not be any delay in getting the supports fixed to the fruit when they are becoming heavy, pieces of board about an eighth of an inch thick and 6 or 7 inches square, supported by four pieces of wire from the trellis in a sloping position, are serviceable. Maintain a good moisture by syringing the foliage freely twice a day when the weather is bright, and keep the evaporation troughs filled with liquid manure, or damp the floors with it a short time after closing. In succession houses and pits maintain a rather warm and dry atmosphere when the fruit is setting, impregnating the blossom daily in the warmest part of the day, and stop the shoots at the same time one joint beyond the fruit. Keep the shoots rather thin, and ventilate freely whenever the weather is favourable, but be careful to avoid cold draughts and a sudden depression of the temperature. See to the lining of dung frames. Water carefully and always with tepid water, keeping the foliage fairly thin, and the shoots stopped a joint or two beyond the fruit. Add some fresh soil to the hillocks as the roots protrude. Afford good night covering over the lights.

CUCUMBERS.—In order to have straight fruits crop lightly and place them in glasses. Presuming the plants to be making vigorous growth, the soil and allotted space being filled with roots, afford tepid diluted liquid manure and maintain a moist atmosphere. Stopping, thinning, and tying the shoots being frequently attended to, with the ventilation and other cultural requirements, the results will be satisfactory accordingly. Syringe at closing time, and damp available surfaces two or three times a day. Ventilate from 75°, keep through the day at that temperature artificially, and 80° to 90° with sun heat, closing between 85° and 90°, running up to 95° with plenty of atmospheric moisture, and allow the temperature to fall through the night to 65°, or on very cold nights to 60°.

THE FLOWER GARDEN AND PLEASURE GROUND.

Mossy Lawns.—Since the introduction of mowing machines mossy lawns have become very general. The scythes and brooms used to check the moss, but the mowing machines only skim the surface and do nothing to counteract the spread of the moss. Want of manure, bad drainage, and frequent rollings with the mowing machines are all calculated to encourage moss, and unless something is done to obviate this difficulty the lawns will gradually become worse. The most complete remedy is to strip off the turf, break up and relevel the surface soil, placing over this a layer of ashes of any kind about 2 inches deep, next a thin surfacing of good fresh soil, and on this relay the turf. Another plan is to frequently stir the surface of the turf with sharp iron rakes, working in plenty of the best ashes procurable, or, failing this, plenty of soot and road grit. This will remove much of the moss, and the fertilisers will encourage the growth of the grass. If the latter is at all thin, sow a renovating mixture of lawn grass seeds as supplied by the principal seedsmen, this being done in showery weather any time in April. A little fine soil may be distributed over the surface, both to hide the seeds and to hasten germination. Roll the ground after the seeds are sown, cut the grass with the scythe when it has become fairly strong, and then give another good rolling. Subsequently the mowing machines will keep it in good order.

Herbaceous Borders.—Now the various hardy button-rooted plants are well through the ground no time should be lost in putting these borders into good order. The least that can be done is to fork in a good dressing of partially decayed manure, as without this assistance many of the kinds soon exhaust the ground, and will not do well in consequence. Strong clumps of herbaceous Phloxes, Pyrethrums, Asters, Japanese Anemones, Potentillas, Tradescantias, Hemerocallis, Irises, Delphiniums, Spiraeas, and other plants that are now pushing up numbers of young shoots, will, in most cases, be greatly improved by lifting, dividing, and replanting. If returned to their former positions the ground should be freely manured and deeply stirred, as there is little danger of any of them getting too much manure or leaf soil. Either the plunging fork or a spade should be used for splitting up the strong clumps, and in replanting see that all are put in deep enough, and the ground about them made tolerably firm. All will be benefited by a mulching with short half-decayed manure.

Gladioli.—A trial should be given in every garden to this grand class of plants. They succeed much better in some gardens than in others, but those that can afford to purchase fresh corms every season, and they are by no means dear, may rely upon having a good display, while in some cases where they do well the stock may be preserved and replanted with every prospect of success. They delight in freely manured, deeply dug, and well-worked land, and if a little fresh turfy loam can be added at planting time so much the better. April is a good month to plant the principal portion of the corms, and if planted at fortnightly intervals a good succession of flower spikes are secured. They should be planted about 2 inches below the surface, and it is advisable to surround the corms with sharp sand prior to earthing. Any that are started in pots in order to secure a few early spikes should be planted out before they experience any check, care being taken to protect them from late frosts.

Dahlias.—Young plants of these kept to a single stem invariably prove more satisfactory than if strong old roots are planted. The cuttings from the old roots started in heat strike best when short and taken off with a heel, but they may be cut to a joint and rooted, providing the stems are not hollow. The cuttings must be dibbled in thinly in thumb pots, and placed in a not over-moist bottom heat, a little air being given when close propagating frames or glasses are used in order to prevent damping. When struck they should be gradually exposed to light and hardened, receiving a shift into 5-inch or 6-inch pots before they are badly root-

bound. Fine strong plants may thus be secured by bedding-out time. If there is no convenience for striking the cuttings the old roots can be started in a cool house or frame, and before they are far advanced be freely cut up and potted off singly into 6-inch pots, but in no case is it advisable to grow more than one stem to a plant. Seedlings may either be pricked off in boxes about 4 inches apart each way, or be placed singly into 4-inch pots. Any fairly rich soil suits Dahlias.

Tuberous Begonias.—Seedlings of these, as soon as they have formed tiny bulbs, to be pricked off 1½ inch apart in boxes or pans, well-drained, and filled with soil consisting of equal parts of fine loam, and either peat or good leaf soil, with silver sand freely added. They should be kept in heat, shaded from bright sunshine, and encouraged to grow strongly. Before they become crowded they may be transferred to larger boxes filled with good soil, from which they will transplant at bedding-out time. The old tubers are best started in boxes of good sandy soil placed in a rather cool house or frame. They are less liable to receive a check when started and transplanted from boxes rather than pots. In their case starvation not unfrequently means ruination.

Golden Pyrethrum.—A box, or boxes, ought now to be sown with this, or if it can be spared a frame and a slight hotbed may well be given up to it, no pricking-out in this case being necessary. Small plants are best for carpet bedding, and the variety *P. aureum selaginoides* should be preferred, this not being so liable to run to seed during the first season.

Annals.—It is yet too early to sow the quick-growing kinds, but the *Phlox Drummondii*, being a slow grower and fairly hardy, should now be sown. The small seedlings, sown in pans, pots, or boxes, of *Lobelias*, *Cinerarias*, *Pentstemons*, *Antirrhinums*, *Centaureas*, *Chamepeuce*, &c., ought to be slightly hardened preparatory to pricking off, or otherwise they are liable to damp off. No time should be lost in sowing *Mignonette* and *Sweet Peas* in the open ground, and if a few seeds are sown in 4-inch pots and stood in a warm house or frame, hardening off the plants and planting out before they become root-bound, a considerable gain will be effected.

THE BEE-KEEPER.

THE CRISIS IN BEE-KEEPING.

It is now the time when those who, from reading the varied articles and experiences in this Journal, or from the knowledge gained from other sources of the great benefits derived from a wise and economic system of bee-keeping, are desirous of this year becoming students in the art, are preparing the appliances necessary for successfully carrying out that plan of action—either super-eekeing or nading, swarming or non-swarming, which to them seems most suitable. It is now, therefore, more than ever necessary to give a few words of advice to all such, lest being misled by the grandiloquent language of the masters of the science constantly recurring in the *Bee Journal*, they spend a sum of money totally incompatible with any increased good result thereon compared with an expenditure of much less magnitude. For the cottager and for that class of country residents who spend all day from home, leaving nobody who is capable of giving attention to the varied details of management, the plan so often—invariably it might almost be said—advocated in the *Bee Journal*, is sure to lead to failure and great disappointment. To read, indeed, in that Journal it appears that the primary outlay is very much greater than generally represented. To-day, for instance, a catalogue of hive furniture and appliances came to the writer, and although the prices are quite, as things go, reasonable, it would be a very easy matter to spend £10 on the “necessary appliances to bee culture;” and all these are advocated in the *Bee Journal*. Now let a man of the class to whom this advice is specially tendered ask himself if he has time in the honey season to extract from his combs their honey every few days; if he can afford to give 15s. to 30s. for a hive, the same for an extractor, 3s. a pound for foundation, 1s. 6d. each for section crates, 7s. 6d. each for Ligurian queens, and like sums, which, though not at all unreasonably high, are still too high for the man with no capital to invest to purchase. The return of honey from these goods may be as great as from the straw hive managed on a simple principle, but it has yet to be proved that it is in the hands of the ordinary bee-master greater than the amount of equally good and saleable honey

annually taken from the hive of straw and simple construction.

The absolute necessities to ordinary bee-keeping on the flat-topped Pettigrew straw hive system of keeping, so long and so ably advocated by the originator of the large skep movement in this Journal, are very few, simple, and inexpensive. For one stock hive the total outlay for appliances of every kind, for hives, for swarms, covers, boards, all combined, ought not to exceed £2, and may, with ingenuity, be reduced to a much smaller sum. This would not buy a good wooden hive, section crates, extractors, and hives for swarms. Mr. A. Pettigrew estimates—and he had forty years' experience—that, one year with another, the nett profit from his system was £1 a hive, or fifty per cent. Can the bar-framists substantiate any claim to a larger profit? It will be useful to note their reply, if any be given. To the student of natural history the bar hive is a very useful adjunct to his persevering researches, but to the "profit seeker" in nine cases out of ten it is a hook, baited so nicely and so exquisitely painted with rivers of gold, that many are caught, and if only they are able to escape from their entanglement without loss are thankful to throw over for ever bee-keeping of every description.

I have tried bar-frame hives and straw skeps, and the yield from the one has been as great as the yield from the other—perhaps a little larger in the case of the bar-frame hive; but then the cost of the hive was so great as at once to reduce the profit to less than that derived from the other. The bar-frame hives are home-made, and accordingly comparatively inexpensive, and bees have wintered in them quite successfully with only ordinary care; but the simplicity of the other system is so perfect, and time to manipulate is so little, that the skep has proved to be the by far most suitable channel from which to gather profit. To dealers in bee furniture the adoption of the skep system would be ruin. A 20-inch straw Pettigrew only costs 5s.—mark it well, ye novices!—and will yield from 80 to 300 lbs. of beautiful honey in a good season, while in a bad one the cost of keeping the bees in health is trifling. Expensive hives lead to disappointment and failure. In most cases the simplest possible arrangement is the best, and doubly so in keeping bees. "Manipulate, manipulate, manipulate," cry the advanced practitioners. The answer is, "We have not time to spare." The country clergyman with a small parish may find time lagging on so slowly that he is glad to waste it on his bees; not so the man who has to toil to earn his daily bread. Let all, then, be careful not to be led astray by the gilded romances of enthusiastic fanatics in the cause of bee culture, but carefully weigh in their minds the issue here pointed out, Whether to attain the same end a great or small capital outlay is the best with no corresponding advantage on the side of the greater expenditure to compensate for the greater effort required to spare it where funds are often low and spare money is quite out of the question.

Again, it is astonishing to find how great the profits made are in many instances, but this astonishment is considerably lessened when on questioning it is found that no regular accounts are kept. Where this is the case no reliance can be placed upon any statement of profit, for in nothing are there so many small expenses as in bee-keeping, and "small expenses" mount rapidly to a large sum if not rigorously kept down. Spend not a penny unless a return for it can be seen; and yet it must be remembered, that although economy is good, parsimony will soon do a great amount of harm. Spend wisely, then, when necessary, but let the necessity be always present. There is only one more point to touch upon in this paper, and that is institutions for the aid of honey producers to sell their goods at a fair price. Here, then, there is to be an introduction of the middleman to this industry. The benevolent shareholders of such an institution or company require a profit, and therefore, says the *Bee Journal* (15th March, 1885), bee-keepers will have to be content with a less price for their honey in order to ensure a

"small profit" for the shareholders. In another instance, it is stated that "a good profit" must be obtained, therefore the logical conclusion is that the price must be lower still. Only a very short comment is necessary after the correspondence in this Journal, and that is: If the company is started as a public company, well and good; but to come before the public with the heralds going before proclaiming the benevolent ideas which originated the undertaking—the wish to benefit the bee-keeping public, keeping in the background the good profit, and playing the good Samaritan in the fore front of the picture—is really more than human nature can stand without indignant protest. It is preposterous; honey producers want no such spurious aid. They hate friendly societies upon such a basis, and with all their might should strive to prevent anyone from becoming a promoter of a cause which, if carried to the end in view, cannot but reduce the value of honey to so low a price as to make its production anything but a paying business or lucrative pastime. If a middleman is necessary, let him be an individual; if help to sell honey is necessary, let assistance be organised on a basis just sufficient to pay expenses. It is not monopoly that is desired, but protection from false friends. It need not be said that there may be very sincere attempts made to benefit others, which not only do not benefit, but the contrary effect is produced by such ill-directed efforts to attain a noble end. And it is so in the present case. Such friends of bee-keepers uniting to benefit the industry will destroy it utterly if the public, forewarned and forearmed, do not withhold their assistance, which if given means suicide of profitable bee-keeping.—FELIX, *Cheshire*.

HOW CLOSE IS THE CONNECTION?

IF Mr. J. Hewitt or any other bee-keeper can conceive any scheme for the advancement of bee-keeping, I for one shall be only too pleased, and they will soon find plenty of friends; but the latest piece of fault-finding by "A Hallamshire Bee-keeper" about Mr. Huckle and Mr. Blow's catalogues is not in my opinion the best method of proceeding.

Most bee-keepers know how nearly allied the *British Bee Journal*, the British Bee-keepers' Association, and the British Honey Company are to one another, and yet how thoroughly distinct they are. Surely none of us can object to any company lawfully trading in honey, and if they give as good a price as other people and pay cash I doubt not but that they will get a fair share of trade. I shall be called an interested party, but I have not applied for any shares, neither am I a member of the British Bee-keepers' Association. The *British Bee Journal*, as well as the *Journal of Horticulture*, I get through W. H. Smith & Son, but still I find I get not only Mr. Blow's but other makers' catalogues. Mr. Huckle has evidently been employed by these manufacturers to circulate their catalogues, but this to me only speaks well for the acuteness of these manufacturers; but those who succeed in getting elaborate descriptions of new hives, &c., and foreign races of bees that they have for sale inserted in the columns of the *British Bee Journal*, only give expression to the same trait of character in a different form.

Mr. Hewitt points out that it is against bee-keepers' interest for us to increase the number of bee-keepers, and consequently the competition; yet I have induced a few to keep bees, and hope to persist in that course, although some of your previous correspondents say no one is benefited but the hive makers. It would be equally just to assert that the National British Bee-keepers' Union was being formed for the benefit of some obscure individuals who want a snug and lucrative post.—A LOCAL ADVISER.

KILLING BEES IN THE AUTUMN.

I WAS rather disappointed with "A Lanarkshire Bee-keeper's" reply to Mr. W. Kruse on page 221; not that I have any fault to find with what he does say, but I think he might have suggested how to manage the bees without having to kill them at any time. I am quite at one with him and Mr. Kruse that it is more humane to kill the bees at once rather than joining two or three together on foundation and feeding them with syrup for winter; but I would rather so manage things that the bees will be converted into honey before the autumn, which I would do in this way. Supposing I had twenty stocks in straw skeps—the best of all hives for winter and profit to the bees—I should expect twenty swarms from them; these I would hive in bar-frame hives, and their management would give an insight into this system. Immediately after Lime bloom I would unite the twenty swarming into five, joining the brood combs and bees of four lots together for the Heather, piling supers on the top, extract the honey from the broodless combs and store them away for next season. I should take each to the moors separate and join them there. By the time the Heather was over the bees would be reduced in numbers so as to make one good stock, so many more bees having been set at liberty to

work, and so much more honey would be stored, thus converting the bees into honey. Last year 12 lbs. of driven bees hived on empty combs on the moors stored 24 lbs. per day for three days, when the weather changed and brood began to hatch. We thus get five stocks to winter instead of twenty, and all the old stocks will have young queens to begin the next season.

All have not the Heather near at hand, but s'ill many have late crops of Mustard, which will do as well; but where there is no late forage suppose you put all the brood from ten stocks into the other ten and sell the spare bees to someone near the moors. In ten days' time further reduce to five, sending another five off. If you can get 1s. per pound for them at a time when they are practically useless to you, surely it would be better than killing them. To show that this latter plan is practicable I will remark that I have arranged with some bee-keepers in Wiltshire to take all their spare bees in this way as soon as their Lime honey season is over, which is two weeks sooner than here. They will come in 8 lb. lots in light boxes, costing in carriage about 1s. each, and being nothing but bees they will arrive in fine order after twenty hours' journey by road and rail. I shall work these bees in very large lots, so as to get the greatest quantity of honey with decrease of bees.

These remarks must be understood as supplementary to those of your valued Scotch contributor; at the same time I think Mr. Kruse has done a good service in advocating the skep. No hive can compare with it as a home for bees, and the man who persuades the poor cottager to discard it for the frame hive is not his best friend.—A HALLAMSHIRE BEE-KEEPER.



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

To Correspondents and Readers.—In consequence of much pressure on our columns we are compelled to defer the publication of interesting articles on "Young Gardeners," "Horticultural Societies," and other subjects of general interest. They will appear as soon as possible.

Address (T. P., Rugby).—If you address your question to Mr. T. S. Ware, Hale Farm Nurseries, Tottenham, London, he will perhaps be able to answer it satisfactorily.

Plans of Flower Beds (Constant Subscriber).—There are a few plans of flower beds in our "Garden Manual," price 1s. 6d.; 1s. 9d. post free—a work in which much useful information is compressed on the cultivation of flowers, fruit, and vegetables. Mr. Graham of Hampton Court publishes a small manual on carpet bedding with designs.

Cinerarias (W. Roberts).—Had there been a little damp moss in your neighbourhood, or even short grass or a green leaf or two of any kind, to have employed as packing for the flowers, they would have reached us fresh; but as they were simply placed loosely in a dry box the florets were curled and contracted to such an extent as to render it quite impossible to judge of their merits. We can only say that the colours are varied and rich, and as you say the plants are of dwarf habit and the blooms 3 inches in diameter, also of good form, the strain must be a good one.

Tomato Leaves Curled (W. D.).—Judging from the specimen sent there is little the matter with your Tomato plants. We have seen several diseased plants this season, but yours are apparently in excellent health, and in all probability the slight curling of the leaves is only natural to the variety. The Orangefield and Old Red types are naturally inclined to curl somewhat, and yours may be one of them. What you imagine to be another insect is only the "White Fly"—*Aleyrodes vaporariorum*—in a young state, and which in a few days would develop into a perfect insect.

Water Your Vines (F. J.).—Had you been good enough to have given an "idea" in your letter as to the size of your vinery border, the nature of the soil of which it is composed, and the state of the Vine roots, it would have been a pleasure to have advised you. As you afford no information on these matters, we can merely say that, provided the border is of an average size, the soil a free loamy one, and the roots in good working order, three gallons to the square yard every ten to fourteen days ought to afford a rough idea, such as you want. As to the sewage, if the roots are plentiful and active, it may be employed, but we should dilute it as 1 to 4 in water at first, and watch the effect. Begonias should be started at once.

Aloe Leaves Decaying (W. K.).—As the petroleum casks were burnt out we do not attribute the injury to them. Are you certain there has been no drip on the leaves? If there has been, and even slight frost penetrated the unheated house, that would result in the blotches. If that is not the cause we can only attribute the origin of the evil to the natural shrinkage of the tissue which followed, the plants being kept "a little too long without water." We rather suspect, however, that the injury has been caused by the action of frost on damp portions of the leaves.

Cocoa-nut Fibre Refuse and Peat (W. W. W.).—We know of no mixture or material that would suit those plants which thrive only in peat soil in nature except peat. But for Ferns the use of peat is by no means necessary, unless it be a few of the choicer and most difficult to grow. Good fibry loam with silver sand and leaf mould added would prove a first-class compost for the majority of Ferns to grow in. The mechanical action of cocoa-nut fibre would, no doubt, be somewhat similar to that of peat when mixed with other soils, as it would keep the soil open, and allow air and water to pass through freely. Used along with heavy loam there can be no doubt as to the good effects of the fibre so far as regards drainage, &c. This fibre has been recommended for Orchids in place of peat, which has become difficult to obtain; but it proved a very poor substitute, as the plants did not thrive in it as well as they did in good peat fibre, and the failure was, no doubt, due to some chemical rather than a mechanical shortcoming on the part of the cocoa-nut fibre.

Hardenbergia monophylla (E. B.).—This is the name of the plant of which you have sent a spray. It is also and better known by the name of *Kennedyia ovata*, white-flowered variety, the type being purplish flowered. It is distinct from the rest of the *Hardenbergias* and *Kennedias* in having solitary instead of several leaflets to each leaf. Trained along a rafter in a cool greenhouse this plant makes a pretty climber; or by cutting in the branches rather freely, as is done by the *Chorozemas*, it may be made to form a little shrub. Peat soil, rather sandy and pressed firmly about the roots, will be found to suit this plant; it likes plenty of water both at the roots and overhead when in vigorous growth. This and all the *Kennedias* and *Hardenbergias* delight in a somewhat sunny position. They may be propagated from cuttings put in in spring. *H. monophylla* is a very common plant in Eastern Australia, from whence it was introduced into England more than a century ago.

Increasing Auriculas (J. R., Southampton).—Three or four pips, or more correctly seed capsules, is a sufficient number to leave. The number of seeds in each capsule varies considerably, self-coloured sorts being much more prolific than the edged kinds. Three or four dozen may be expected in the former and a dozen or so would be a fair average in the latter. At the time Auriculas are in flower insects are not so common as to be disturbing agents; but careful hybridists will take every precaution to ensure the end in view being secured. The growing point to be removed from plants is that which follows the flower stalk; it is cut clean out with a sharp penknife without damaging the spring-formed leafage. The point is no use for a cutting. The whole question of pinching and striking the tops of Auriculas is one that the grower must determine by his own judgment; but a good rule to go by in any plants of which stock is wanted is this. If the plant is young, pinching will be best; if old and with a little healthy stem, then the top may safely be taken after flowering and a good plant secured from that, with a crop of young growth which will come on the stem after the removal of the top.

Planting a Flower Bed (C. E.).—As you have taken the Journal for many years it is somewhat strange you have not observed what we have many times stated—namely, that we do not undertake to suggest methods of planting flower beds in answers to correspondents, and the utmost we have done occasionally is to name what we consider the effective arrangement of plants when a list has accompanied the inquiry; but as we stated as recently as in our issue of March 19th of the present year, page 242, we much prefer for individuals to submit their own mode of planting, and if we can suggest any improvements we are willing to do so. We cannot initiate a method of planting your bed. We have no idea of its size, position, or surroundings, nor whether you desire a formal or mixed arrangement of flowers. In the latter case the shrubs might remain, or they might even do so if the carpet bedding system were adopted, as each could be in the centre of sections of a design; but if you desire an unbroken ribbon-like mass of distinct colours, then the shrubs should be removed. You had better refer to the answer on the page quoted if you desire to write to us again on this subject.

Top-dressing Vine Border (E. G.).—It is rather late to top-dress the border, but it may still be done, but it will not answer to surface the border with 6 or 7 inches depth of fresh soil, as that would bury the roots too deeply, unless they are near the surface and active, in which case a rather thicker top-dressing than usual may be given, and being mulched with short manure and kept moist the roots might probably be attracted upwards. It is, however, at best a bad practice, and we do not advise its adoption. We should surface-dress with 2 or 3 inches thickness of fresh loam to which has been added a fortieth part of half-inch bones, the surface soil having previously been loosened and the inert soil removed, being careful not to injure the roots. After the border is surface-dressed a good watering may be given at a temperature of 85° to 90°, and when the surface becomes rather dry apply a top-dressing of short manure, which should be kept constantly moist, so as to encourage surface-rooting. The subsidence of the soil ought to have been allowed for in making the border, and to add to the depth now by adding to the surface would be to bury the roots, whereas the aim should be to keep them active near the surface. Perhaps they might be encouraged upwards by adding a little fresh soil each year, in which case no injury would accrue to the stem, as it would push roots into the border; still, it is best to proceed in such matters carefully, as a heavy top-dressing by burying the roots too deeply may be a forerunner of shanking. Besides, Vines with the roots at a great distance from the surface rarely finish the crop well, and do not ripen the wood satisfactorily.

Osiers (East Anglian).—We cannot better answer your question than by citing from Mr. Scaling's prize essay on this subject as follows:—"The species of Willows are very numerous, and much confusion exists in their

matters of detail of the highest moment—aye, every one of them, for knowing as we do how much success depends upon doing little things well, we certainly cannot regard one of them as trifles in the ordinary sense of the term. Repeatedly have we called especial attention to matters of detail at the time when the work of which they form part could be done to most advantage, having due regard to results, and the recent inspection of several farms upon a large estate has only served to strengthen our conviction of the importance of close attention to little things, and of the existence of much slovenly practice in all branches of farming.

“I like a four-course shift,” said a worthy old farmer to us during our inspection, and, as our lively French neighbours say, he had every reason, for he is facing hard times right manfully, and making a fairly successful struggle through a period of depression to which many another has succumbed. But we uphold no unreasonable clinging to custom or rotation of cropping; rather would we yield to expediency and do our best to crop the farm, so as to insure a full supply of crops that are to be regarded as indispensable. No sympathy have we with those who fly to extremes, as so many farmers are undoubtedly doing just now; there must be balance, proportion, or, as Emerson termed it, measure in our plans. The home farmer, fortunately, is bound to have enough Wheat, Barley, Oats, roots, and fodder for the supply of flour for the household, and food for the animals of the farm as well as for the carriage and saddle horses of his employer. If to such crops he can add Peas and Beans it is most desirable he should do so, for both crops are still to be grown at a profit, and both afford a valuable supply of food for fattening purposes. It must not be forgotten, however, that the home farmer has now frequently to take other farms in hand, and in his laudable efforts to “make things pay” he must remember first of all to insure a full supply of food for all the animals of the farm, and then to sow crops for which he has reasonable hopes of a sale. “What food do your horses have?” said we to the bailiff of a large farm upon which twelve horses were employed. Maize was the first article of food enumerated, and we came to a full stop at once. “How is that with an arable farm of between three and four hundred acres, you are buying food for the horses?” was the very natural inquiry. “Maize is very cheap” was the evasive answer, and upon pursuing our inquiries it came out that not only was he without Oats, but he had come to no definite decision about sowing any. Now this man was specially mentioned to us as being a good farmer, and certainly as a tiller of the soil, and so far as sowing his crops in good time entitles a man to that somewhat vague designation, he is; but he has not yet become a master of detail, and without it no man can farm profitably. In our report to the owner of this farm we felt bound to state that not only must he continue to buy corn for the horses this year, but also next year, unless immediate action was taken upon our report and an ample area of land sown with Oats. It is obvious that the only sound practical reason for using imported Maize to home-grown Oats would be found in a clear profit upon selling Oats at a much higher rate than Maize could be purchased for, there would then be a margin of profit, and the transaction would be both justifiable and praiseworthy.

We were forcibly reminded of the importance of prompt energetic action and timely culture upon another and still larger farm, where, with the exception of Winter Beans, which were a good strong plant, the whole of the crops were in a backward condition, affording unmistakable evidence that the bailiff was, and had been for some considerable time, two or three weeks behindhand with his work; yet he had steam tackle in full work upon the land during the fine weather of last summer and autumn, and also enough horses for the other work of the farm. He, too, was not a master of detail, and was clearly unable to arrange his work in due order. Unfortunately, he was also slovenly and careless as well, as was seen in stacks of straw made from corn recently

thrashed left unfinished and unthatched to be soaked by the first heavy downpour of rain, and much of it to be blown about the yards by high March winds; Wheat stacks with the thatch half blown off, and several Barley stacks positively honeycombed by rats. Now we are assailed on all sides with outspoken complaints of hard times, agricultural depression, high rents, and, it must be owned, not without reason; but we could not advise a helping hand to be given to anyone guilty of such palpable negligence, and in this instance positive dishonesty, for we hold that no lighter term can be applied to the man who thus suffers his master's property to be destroyed. One word more about fallows, which we regret finding not by any means so entirely a thing of the past as we hoped was the case. Again we say, Clean your fallows at once, and sow with White Mustard, using 20 lbs. of seed per acre, and when the Mustard is in full flower plough it in, and thus store the land with fertility.

WORK ON THE HOME FARM.

Horse and Hand Labour.—Never was there a more favourable time for sowing spring corn, and it was done in a fine tilth speedily and well. Potato-planting followed, winter corn and grass meadows are rolled, and we are now busily at work upon the land for Mangolds and Carrots, both which crops we hope to have sown within a week from the present time. Carrots are sown in good light land in drills upon the flat about 8 lbs. of seed per acre. For Mangolds we plough the land in autumn, and now sow upon it three-quarter cwt. nitrate of potash, half cwt. nitrate of soda, 2½ cwt. steamed bone flour, and 2½ cwt. ground coprolite. It is then stirred with the broad horse hoe, furrows made with the double-breasted plough; and farmyard manure, long ago carted to a heap close by for this special purpose, is put along the furrows at the rate of about 10 tons per acre. The manure is then covered by the double-breasted plough, the seeds sown upon the ridges, over which a light roller is passed. In ordinary seasons early sowings yield the heaviest roots, and germination of the seed is speedy and certain. We have now an excellent supply of Mangolds, which will prove of the greatest service among the cattle for another month. Sow now, too, Drumhead Cabbage, Lucerne, and Kohl Rabi.

Cattle and Sheep.—Now that the calving is almost over, and most of the cows are in full milk, we can profitably keep late or weakly calves longer with the cows than was possible earlier in the season. This course is especially advisable for the home farmer who now has a considerable surplus of milk and butter, for it enables the calves to grow faster and stronger than any other food can do. Look closely after delicate and weakly yearlings, keep them apart from stronger animals, and give them a generous diet, and do not turn them out upon the pastures till they are in good healthy condition. It certainly pays to keep them late in the yards, but if the yards open upon a little paddock they may run out with advantage for a few hours daily. In breeding flocks having the taint of foot rot, that troublesome disease will now be found spreading among the lambs. Do not trifle with it, but pen the entire flock in a yard; an ordinary fold will not answer, for when the sheep become frightened they will jump over the hurdles. Handle every one of them, and dress all bad cases with Gell's foot-rot ointment, first wiping the feet clean and washing them if necessary, and cut off any broken pieces of hoof. Pass them on as they are dressed into another enclosure littered with clean straw, and with feeding troughs all ready for a few hours, and then turn them upon grass that is free from the taint. Turnip-folding may be continued, as the land is fresh and untainted.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain	
	Barometer at 32° and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1885. March.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
Sunday	22	29.827	33.9	33.7	N.	41.0	45.5	32.4	84.4	32.0	0.022
Monday	23	30.345	37.1	33.9	N.	39.4	43.6	30.2	75.9	25.2	—
Tuesday	24	30.297	36.1	32.9	S.E.	39.0	40.8	23.4	55.1	22.4	—
Wednesday ..	25	30.310	37.0	32.6	S.E.	38.4	42.3	31.4	51.1	26.6	—
Thursday	26	30.162	42.0	39.4	S.	38.2	49.7	35.9	77.6	31.0	0.162
Friday	27	29.894	45.2	41.6	N.W.	39.7	51.6	38.9	95.3	33.0	—
Saturday	28	30.375	40.8	36.7	N.E.	40.2	51.8	33.4	91.2	27.6	—
		30.173	33.9	35.8		39.4	46.5	32.9	75.8	28.3	0.124

REMARKS.

22nd.—Rain began about 1 A.M., became heavy until 5 A.M., when it changed to snow, which fell heavily and ceased about 10 A.M., when it was 2½ inches deep. Fine afterwards.
 23rd.—Fine bright cold morning, ice on tank, snow nearly all gone; cloudy day.
 24th.—Dull and slight fog all day, very dark late in afternoon.
 25th.—Foggy but little cloud.
 26th.—Fine and pleasant, rain in evening and at night.
 27th.—Fine and bright, with cloudless evening.
 28th.—Fine early, with slight fog after 3 P.M.
 Generally dry and colder, with frost nearly every night.—G. J. SYMONS.



COMING EVENTS

9	TH	
10	F	Quekett Club at 8 P.M.
11	S	Royal Botanic Society at 3.45 P.M.
12	SUN	LOW SUNDAY.
13	M	
14	TU	Royal Horticultural Society, Fruit and Floral Committees at 11 A.M.;
15	W	Newcastle on Tyne Spring Show. [Promenade Show.]

USEFUL SPRING FLOWERS.

TO attempt to describe the floral wealth of spring would be only the beginning of what might prove a large volume, so great are the plants in numbers and so much might deservedly be said respecting them. My chief wish, however, is to call attention to a few of those vernal beauties that from a variety of causes are said to be fastidious either as to soil or situation, and which are moreover not everyday occurrences—plants which should be to the fore in every garden where beauty is at all sought after.

What is more choice, more lovely in the extreme, and, until the last few years, more rare than *Chionodoxa Lucilæ*, or the "Snow Glory?" Surely none among the numbers of spring flowers can surpass the innocent beauty of this lovely bulbous plant. The sunny days of late have afforded welcome assistance, and already in warm favoured soils flowers and bursting buds are plentiful. Many were the opinions at first expressed respecting this plant, caused probably in a measure by a number of *Scilla bifolia* being sent along with it, and of which I had a goodly share, and also from its being recommended as a good pot plant for conservatory and greenhouse decoration. No one, however, knowing the plant could recommend it for this purpose, for I know of no plant delighting more in the full sunshine than this; under glass (if only in a frame) that combination of colours which makes up so striking a contrast is to a great extent destroyed. To those who would grow it well I say, Give it freedom, planting it in light sandy soil, to which might be added a little peat. Give it a position to itself, and allow it to seed at will. Success will be the result. Do not be surprised to find seedlings in abundance springing up, somewhat resembling a bed of spring Onions thickly sown. For naturalising it has no equal, and should be planted on banks or slopes high up, and the falling seeds will in time furnish the whole bank with its pleasing blue and white flowers. This mode of planting is successfully adopted at Belvoir, where Mr. Ingram fully recognises its value and requirements. I was the possessor of a single bulb a few years ago, which was secured for 7s. 6d., and that as a favour; but now a hundred imported bulbs may be bought for the same money, so that it should be in every collection of spring plants.

The Creeping Forget-me not (*Omphalodes verna*) is another lovely blue spring flower which carpets the ground with its leaves. It is a cool and shade-loving plant, and apart from these conditions is seldom seen in a thriving condition. When rightly placed, however, and under the above conditions it becomes almost rampant. I have met with it, however, in lovely patches several feet across studded with its intense blue flowers, and like that it is one of the most charming plants I know. To see a fine patch of it aglow with flowers, and unexpectedly too, fills one with enthusiasm. It comes long before the Forget-me-not opens its flowers, and is most welcome. Three weeks ago I saw

fine patches of it at Maidenhead in a garden adjoining the Thames. There, as in all other cases where I have seen it in good condition, it occupied a cool and partially shaded spot, and this is the chief point to be studied in connection with it at planting time. This is much more important than soil, for I have seen it in very ordinary garden soil among shrubs, in stiff soils on the warm sunny slopes at Belvoir, and in a semi-wild state in Gloucestershire high up on the Cotswolds, freely rambling among the magnesian limestone and oolitic marl of that district. It is well suited among other places to a position in the rock garden, choosing a cool shady nook which is always moist; indeed there are many plants, such as *Erpetion reniforme* and others, which delight in such spots, and which always repay the extra attention or study in selecting the most suitable position, which once discovered is not readily forgotten.

The Netted Iris (*Iris reticulata*) is one of the most brilliant and welcome among the earliest flowering of the bulbous section in the year. Those who do not know it should make its acquaintance as speedily as possible. No one can see this spring beauty without admiring it—the closer the inspection the greater the beauty to be discovered; and it is fragrant too, which is not the least feature in connection with it. The predominating colour is rich violet verging into purple, the richness of which is intense, the "falls" or lower petals being rendered doubly conspicuous by the deep orange-gold marking or blotch. Its fragrance is that of the Violet, and is easily detected when standing in the vicinity of a small colony of plants in flower. Imagine all this lovely colouring peering from a bed of snow! Still it is by no means uncommon, since it frequently expands early in February, though more often during March. Its cultivation is simple if the following rules be carried out, but do not attempt to grow it in pots continuously. Choose for it a sunny position in the border, with fairly light soil to a good depth; or failing this, remove the soil and supply a mixture of very sandy loam, leaf soil, and peat in about equal parts. Be sure not to plant it in cold stiff soils, for it will soon perish. A well-drained position with abundance of sharp sand or grit among the soil will suit it well, or it does not object to a very peaty soil. It increases somewhat freely at the root, and also yields a fair amount of seeds, which should be carefully preserved and sown as soon as ripe. It is so good and choice that it is seldom seen in quantity. At Painswick the late Mr. James Atkins had a fine bed a few years ago, and to see it *en masse* with its lovely flowers is a sight always recurring to one's mind. In the light sandy soil at Tooting it does well. The variety known as *Krelagei* is equally good and charming in all respects, though not so plentiful.—J. H. E.

NOTES ON CELERY.

Good Celery is always a much-valued crop, and in many gardens it has to be grown in large quantities; but its culture is not confined to these, as there is hardly a garden in the country where it is not grown, and very often an amateur has one or two rows as fine as any which is cultivated with the most practical care. To produce the best Celery requires much attention. It is not one of those crops which can be sown and then left to itself until it is ready for use. It requires as much attention to finish it as to rear it, and all soils do not suit it, but it is not by any means difficult to cultivate.

Seed-sowing is the first consideration. To secure a few early plants a little seed must be sown about the end of February, but the main crop should not be sown until the last week in March or the first week in April, and it will be found that plants from this sowing are much less liable to "bolt" in summer than those from the early sowing. The principal season for Celery is from the end of August until April and March. Full-grown plants will be obtained by the time named, and small growers, especially amateurs,

would find it advantageous not to sow until now, as the young plants start away much more freely and require less attention in April and May than they do in February and March. There are various ways of sowing the seed. If only a few dozen plants are required sow a pinch of seed in a 6 or 8-inch pot. If one or two hundred plants are wanted they would be raised in a cutting box, and if some thousands are required we make up a gentle hotbed and sow the seed in a one or two-light frame. In all cases soil consisting of fine loam and Mushroom bed refuse or leaf soil should be used. Sow the seed thinly but evenly over the surface, and it may be covered to the depth of half an inch. Pots or boxes should be placed in a house or pit where the temperature is 65°. If sown in frames the lights may be drawn up or down on fine days, but not until the plants are above the soil.

A favourite mode with me is raising the young plants in boxes, keeping them in these until about half a dozen leaves are formed, when a slight hotbed is made. The surface is covered with 6 inches depth of rich soil, a frame is put on and a light over it, and then the small seedlings are dibbled all over the surface 3 or 4 inches apart. They remain there until they are transferred to the trenches, and as they are lifted with good balls of soil they very rarely fail. Indeed, out of 10,000 or more Celery plants put out in recent years we have not had fifty blanks from any cause, and I never look for or experience any Celery failures. This is mainly attributable to treating the young plants well when they are in the seed boxes and nursery beds, and care then will always be repaid.

Excessive dryness at the root is ruinous to Celery at all times, especially when the roots are very small, and those who allow their seedlings to suffer in this way will find many of them start flower stems not long after they have been placed in the trenches. A moderately rich soil and constant moisture at the root will unfailingly produce the best Celery.

Some may think that it is only when the plants are large that they require the "finishing touch," but I would say it is at the beginning and not at the end that the most attention is required. When the seed is sown very thickly the plants generally come up in a dense mass, and then they are very liable to be tall and slender; but this should be avoided, as spindly plants are never profitable. Thin sowing and timely transplanting will always prevent crowding. When the plants first appear they must not be kept in a dark situation, but they ought to be close to the glass and in full light. They are rather delicate at first, but they soon harden, and they should not be kept longer in a warm place than is sufficient to start them into growth freely. Sometimes when there has been no hotbed material to make up for the reception of the plants I have dibbled them into boxes, but they were never so fine in them as in the beds, although I would use the boxes now if we had no beds.

In cases of necessity Celery seed is sometimes sown in the open borders early in April, the plants being taken up and dibbled into nursery beds like Savoy. In favourable seasons and in good localities sturdy plants may be reared in this way, but they are not early nor so satisfactory as those raised in frames. In February last a great many Celery plants were growing where Celery seed was sown the previous autumn, but although these young plants looked all right, they could not be trusted to take their place as a main crop, as when the warm weather comes they will start so suddenly into growth that three parts of them will flower before they are many inches in height.

There are many good varieties of Celery, and all may be made superior or inferior by the culture afforded them. It is a good plan to select the cleanest part of the garden for the Celery crop. Old soil full of worms and grubs will never produce good Celery. In one part of our garden it would be severely eaten, and much of it would be hollow in the centre, while in another it would be free from spot or blemish and sound to the core. The latter is a poor light soil—too poor

indeed for worms to exist in it, and we keep it poor except where the rows are planted. It is levelled when the trenches are finished or empty. A quantity of ashes is dug into the surface generally, but when the trenches are formed a large quantity of manure is put in the bottom of each. This is dug or forked in, and no more manure is required. No rich soil is needed for earthing up; this is the worst kind which could be used, the poorer the better.

The best of all manures for Celery is that from earth closets. Two years ago we planted some trenches, in one of which was used horse manure from the stables; in another cow manure, and in a third earth-closet manure, and the latter not only produced the earliest Celery but the strongest and most satisfactory. The trenches may be formed now or at any time before the planting season, but the manure should not be forked into the bottom until immediately before planting. The most convenient way of growing Celery is to plant it in single rows in narrow trenches 3 feet or so apart; but two or three rows in a wider trench are easily managed. In planting always secure the plants with a ball of soil about the roots if possible. Let them well into the soil, and when planted tread the ground firmly with the feet, then water thoroughly, and a fine crop is sure to follow.

Celery requires very careful earthing, and unless this be done in a way to prevent the soil falling into the centres of the plants, the produce, no matter how good it may be, will be spoiled. One of the best ways to avoid damage in earthing is to put the soil to the plants in very small quantities and at intervals of twelve or fifteen days. It is no use exhibiting Celery unless it has been properly earthed and turns out thoroughly blanched and spotless. This is of the utmost importance.

I have never received more letters on any subject than have come to hand on the White Plume Celery since my notes appeared respecting it in the Journal, and it is sure to be extensively grown this season. The young plants of it ought to be raised like any other Celery, but when planting time comes do not put it in trenches but on the level ground, and by October it will be in excellent condition for the pantry or kitchen. In some parts this Celery might not prove so hardy as the others, but for autumn and early winter use it merits attention.—J. Muir.

THE PEACH AND NECTARINE.

(Continued from page 268.)

[An essay read before the Liverpool Horticultural Association by Mr. A. Jamieson, Haigh Hall Gardens, Wigan.]

Thinning the Fruits.—Thinning is commenced as soon as the fruits are the size of peas, regulating them at proportionate distances, leaving those best placed to catch the rays of the sun. I think it would be best to thin severely at once, but confess I do not often do so, there is the fear of the stoning period. I believe if we had only the courage to remove a greater number earlier fewer would be lost during the stoning period, in many cases it is Nature's way of getting rid of her too heavy burden. The question is often asked, How many should we leave on our trees, or what do you consider a good crop? I have often read of astonishing crops, at least in number. I think one fine Peach is better than six small ones, and one fine fruit for every superficial foot is a really very good crop. Nectarines will of course carry a larger number, say about one-third more.

Exposing the Fruit to the Sun.—I consider this is a great advantage, as it gives them that beautiful tinge that is so delightful. When they are well on with the second swelling, and about two or three weeks before they will be ripe, I have a number of thin laths cut in lengths to reach from wire to wire; these I place behind the fruits, and thus throw them out a little, pressing aside or removing any leaves that may be in the way. This brings all the fruits into view, and in the case of large trees well fruited presents a most pleasing sight.

Gathering.—I have often seen nets suspended to catch the falling fruits; this is, I think, wrong, and worse than useless. The first fruit that falls may be all right, but the second and following ones generally roll up to and injure the preceding. But apart from this, I maintain that the Peach is in every respect better to be gathered before it is dead ripe; if left till

they fall from the tree the fine brisk aroma is gone. I make it a rule to go over the trees every day, and with the fingers and thumb catch the fruit at the back. If nearly ripe a gentle pull or pressure will separate it from the tree, and a little practice soon enables one to see which is likely to be ripe. If they are wanted soon place them on a warm shelf, and if not they will keep in the fruit room eight or ten days. I generally cover a table in the fruit room with cotton wool, on this place tissue paper; placed on this they will keep well, and thus treated are far better for packing and also for eating than when left to fall from the tree.

Insects.—The worst of these is red spider. I have had trees that never had a trace of it, but once on the trees they are difficult to get rid of. The best preventive is a liberal use of the syringe, but this must be discontinued when the fruit begins to ripen, and then they increase with alarming rapidity. When the fruit is gathered I have syringed with compounds, such as Fir-tree oil, lemon oil, and once with petroleum. This latter certainly killed the spider, but I think somewhat injured the trees. I think softsoap and tobacco water the best and safest remedy. In the winter cleaning of such infested trees I have tried all sorts of compounds for painting the trees, but never found any painting effectual. I dissolve softsoap in tobacco water, and with a brush dipped in this scrub all the old wood, and with a sponge dipped in the same mixture run it up from the bottom to the top of the young shoots; this makes all clean, and keeps the pores of the bark open. Mildew in some places is also troublesome, but I have never been troubled with this on Peach trees under glass. Scale is also found on the Peach tree. The best cure I have found for this is when the trees are pruned tie them in bundles, dissolve a few lumps of lime in water, stir it, and when hot apply it to the trees through the jet of the syringe until they are well smeared over with the lime, leave it on for a day or two, and then wash it off. Black and green aphides are often troublesome, but gentle fumigation or syringing with tobacco water will destroy them.

Ventilation.—This requires great care, and I do not know any more tantalising work than attending to it during a day when there is a bitter cold wind with blinks of bright sunshine. Speaking generally, I like to ventilate early so that the temperature may rise after the air is given. I make it a rule to give a little air in front as soon as there is the least indication of sunshine, increasing the supply as the temperature rises. I prefer, on the whole, to give the chief ventilation at the front or bottom. A small opening at the top lets out a large quantity of heated air, and by having the larger opening at the bottom there is not so much danger of cold draughts. I like to close the house early, and, as it were, bottle up the sunbeams, but it will not do in the earlier stages to close with too high a temperature. I have seen Peaches considerably injured by doing this.

Forcing.—Having now alluded to a few points in connection with the cultivation of the Peach, I will say a few words respecting early forcing. I have for several seasons gathered ripe Peaches as early as the last week in April, and once as late as the 14th November. The Peaches introduced by the late Mr. Rivers are valuable in point of earliness, and that I consider their chief merit. Early Beatrice is prolific, but very small. Early Louise is good-looking, but I have never been able to get anything like a full crop. Early Rivers is a very fine-looking pale Peach, but the stones often split just as the fruit is nearly ripe, and the quality of the three varieties is only second-rate. The Nectarine named Lord Napier is a most excellent variety, and considerably earlier than Elruge, and will, I feel sure, be largely cultivated for early work. The early trees are generally pruned, cleaned, and tied, &c., early in October. I usually fork in a little bonemeal, and sometimes add a little fresh soil to the borders, and shut up about the middle of November. If the weather is mild very little fire heat will be required. I like to keep the night temperature low, say 40° to 45°. I am no stickler for uniformity of temperature, but prefer to be guided by the state of the weather. When very severe I would rather see the morning temperature at 35° than 45°. I like to raise the heat during the day, especially if there is a little sunshine. At this stage very little air will be wanted; I consider it useless to increase the fires and then open the ventilators to let in the cold air. The syringe must be very carefully used—only when there is sunshine, and then very gently, keeping the surface of the border moderately damp. Towards the end of the year the blossom buds will begin showing colour, when an increase of temperature may be given, say 5° to 7°. When the trees are in bloom I have dusted them with a camel's-hair brush. The last few years I have used a rabbit's tail tied to a small piece of twig, this is a much more expeditious and equally effective instrument. I have also for several years, when the tree have

been in full bloom and the sun shining, given them a gentle syringing, and this is the best of all plans. I am not sure that these operations are really necessary; a gentle shake of the trees two or three times a day when in bloom would probably be all that was necessary. Then follows the disbudding and thinning of the fruit, and with the lengthening days the syringe may be more freely used. I often think we dash the water on them with too much force. I do not care to syringe much in dull weather, but twice a day when fine. When crops are heavy we mulch the border with manure. This supports the tree, keeps the surface moist, and helps to keep the roots near the surface. The stoning period always seems a long and anxious time; when that is passed there may be a considerable increase of temperature if the fruit is wanted as soon as possible. The trees will require copious supplies of water; and of various manures to assist during the swelling period there is nothing better than liquid manure from a farmyard diluted with water. I do not let the borders get anything like dry when the fruit is ripening or ripe, being convinced that dryness does not add to the flavour. When the fruit is all gathered the syringe may be freely used. I fear we often forget this. All through the summer and autumn they want attention, especially in watering, as most of the roots are produced after the fruit is gathered.

In looking back over the past thirty years I am convinced there has been a very decided advance in the cultivation of the Peach. I am, however, fully convinced that there are yet undeveloped capabilities in the tree, and to young men, who possess advantages in many ways that were not available to some of us, and who are imbued with an ambition and determined to achieve success in their profession, I would say, While practising all you already know, experiment, think for yourselves, leave the beaten track, not by fits and starts, which are too common, but with that quiet steady determination that never falters or is discouraged. Acting in this spirit and with these resolves not only will you worthily sustain the present high standard of cultivation, but a willing and fruitful tree will respond to your care, kindness, and attention by producing fruits that will excel any that we have yet seen.

ANEMONES AND POLYANTHUSES.

I do not think it is so generally known as it should be, that beds of these form one of the rarest attractions of spring in the garden. The Anemones are considered as requiring a warm climate in order to induce them to bloom satisfactorily throughout the early spring, but provided a sheltered spot be chosen, no flower, not even the Snowdrop, adapts itself to circumstances more bravely than these. The way to cultivate them is to buy a 3d packet of seeds, then prepare the soil by mixing a layer of cow and horse dung from 6 to 9 inches in thickness with the soil by digging. In the beginning of April sow the seed very thinly over the surface of the ground, give a slight raking, and finish by sprinkling some dry soil and Mushroom-bed manure over the surface. The after culture consists in keeping down weeds and thinning any plants which are growing too closely together; 6 inches apart is a good distance. A few blooms will be produced through ordinary winters, and in spring the flowers will be thickly thrown up. If seed is not wanted, the plants may be dug in when the flowers are past, the succeeding year's plants being again secured from a fresh bed. Anemones are of great utility for vase-furnishing when cut. Double Anemones, though lacking the grace of the singles, are well worth growing. The good sorts are very brilliant in colouring, such as L'Eclair, Feu Superbe, and the double form of *A. fulgens*.

The Polyanthuses are managed in exactly the same manner as the Anemones. Strong plants which produce abundant blooms can be raised and flowered within the twelve months, only high culture is necessary. The least tendency to neglect on the part of the grower will be resented by the plants. A damper cooler situation than that chosen for Anemones should be selected for these. A slight mulching of dung in the autumn, or if not given then, in early spring, will be found most beneficial. It must be understood that I am at present keeping entirely out of view the Polyanthus of the florist, which, from the decorative point of view, is altogether inferior to self-coloured and fancy kinds, which are procurable from a good strain of seeds. Some of the yellows are extremely lovely, ranging from creamy shades to those approaching orange. I have also selected some white forms during past seasons which are very pretty. Then we have many shades of rose, crimson, maroon, some quite self in colour, many with silver edges like Picotees, and mottled forms, which are very attractive to some people. In fact, it is dangerous to condemn any of the flowers, for what one may consider as worthless, another will at once select as pleasing in

colour or shading. Then some of them possess a delicious scent, which always tells in the favour of an otherwise poor flower. It is worth while to save seed from the Polyanthus, as good seed is somewhat expensive. The way to do is to lift any desirable varieties from the beds, and either pot them or replant them in a shady position out of doors isolated from the others. Cross-fertilise short-styled flowers with those which are long-styled, and an abundant supply of seed will follow. Of course, pin-eyed flowers will be selected just as readily as the more orthodox thrums, for we are here not so much intent on securing a little refined beauty as a broad mass of flowers which will please everybody who has a love for floral life.—B.

CROPPING.

(Continued from page 229.)

DIRECTIONS applicable to all cases cannot well be given, as circumstances differ considerably, yet it may not be inappropriate to offer some remarks on the different crops, by attention to which successional supplies can be had from the same ground for a long period without deterioration.

Whether we adopt separate or simultaneous cropping rotations are necessary, and in offering these remarks I am guided solely by the experience gained in having to meet the requirements of a large establishment from ground that excluded any but the simultaneous cropping system. I ought to premise that where high cultivation is practised it does not answer to grow late Potatoes and similar vegetables required in large daily quantities, for they need to be treated on the separate crop system.

Let us begin with Potatoes, which is a most general first crop when ground is broken up, and they may be taken after almost any crop, except Carrots, Beet, Parsnips, Salsafy, and Scorzonera. I have even known Potatoes taken after those without any greater disadvantage than attends following one crop of Potatoes with another of the same, which was practised prior to the general prevalence of the disease in 1845. Indeed, I have known two crops of Potatoes taken from the same ground in one season, and not only that but for consecutive seasons, one plot of ground in particular being planted with Ashtop Potatoes year after year, and disposed of in late June or early July in the large manufacturing towns of the West Riding of Yorkshire, and on the same ground the "seed" for next year's crop was obtained when the first crop of the current year was lifted. What was not occupied with seed Potatoes was sown with Turnips, with the result that the Turnips were affected with "finger-and-toe" considerably; but the Potatoes invariably did well after the Turnips, whilst where the second crop of Potatoes was taken the succeeding early one was not so good as after the Turnips. Between the rows of early and second early Potatoes I invariably grew the whole of the Brussels Sprouts, Broccoli, Savoy, and Borecole, also the Michaelmas crop of Cauliflowers and autumn Cabbages, taking the Cabbages, Cauliflowers, and Savoys between the rows of the early Potatoes, which are about 2 feet apart, and the Brussels Sprouts, Broccoli, and Borecole between the rows of the second earlys, which are 30 to 36 inches asunder. These are off—the Cauliflowers early enough to sow early Peas, the Cabbages and Savoys for second earlys, the Brussels Sprouts are followed by the main crops, and the Broccoli with the late crops of Peas. Between the rows of Peas, Radishes and Summer Spinach are grown, and afterwards Celery, the Peas being sown somewhat wider apart to allow of the Celery being taken as an intermediate crop, and after the Peas are off the spaces are utilised for late Lettuces and Endive. The Celery is off sufficiently early for cropping the following year with Onions, and the whole root crop may be taken, as the Celery is dependent more on the manure in the trenches for support than on the ground; but it is not a good rotation to follow Celery with Carrots, Parsnips, or Parsley, but Peas, Potatoes, and Brassicas are suitable. The Onions can be followed by Cabbages for spring use; when they are gone crop with Peas, Dwarf or Runner Beans. These are off in time to allow of a good manuring and digging or trenching in autumn, and after a winter's exposure the ground is in first-rate order for Potatoes or any root crop. Potatoes may be followed by any crop.

The next most important crop in gardens is Peas, which may follow any crop except pod-bearers such as Broad Beans, Kidney Beans, or Runners, being best after root crops, as Potatoes, Carrots, Parsnips, and the whole of the Brassicas, including Turnips. Between the rows Radishes and Spinach may be sown, which crops are off in time to be followed by Celery; or if the Peas follow root crops (except Turnips) Cauliflowers, Broccoli, Brussels Sprouts or other winter greens may be had between the rows. Peas can be succeeded by the Brassicas or Cauliflower, Broccoli, Cabbages, Turnips, &c., but this is not a good rotation when the Peas are taken after a previous crop of Brassicas. I may mention, however, that I had a border over a dozen years cropped with Peas, and followed by autumn and early winter Broccoli, which were all that could be desired, the ground being manured after each crop.

Brassicas—by which are meant Cabbages, Cauliflowers, Broccoli, Brussels Sprouts, Savoys, Borecoles, and Turnips—should follow, or be simultaneously with Potatoes, Peas, Broad and Kidney Beans, Lettuces, and Onions, also Carrots, Beet, and Celery. The whole of the Brassicas afford a suitable rotation for Peas, Beans of both kinds—i.e., Broad and Kidney, root crops, such as Beet, Carrots, Parsnips, Scorzonera, Salsafy, Celery, Lettuces, and Endive.

It is hardly necessary to carry the subject farther, as sufficient has been advanced to show that the chief thing to aim at in cropping is not to follow any crop with another of the same kind, as for instance Celery should

not follow Carrots, Parsnips, and Parsley; and if an intermediate crop is taken it must be of those that have not occupied the same ground in the previous year, but Lettuces may be planted between the rows of Celery.

In a similar manner Beet ought not to follow Spinach, Salsafy, Scorzonera, Carrots, and Turnips. Leeks, Shallots, and Garlic should not follow Onions; Endive should not be taken after Lettuces, Salsafy, Scorzonera, or Chicory, and keeping these matters in view cropping becomes very much simplified, and gives little cause for anxiety. The chief points to be attended to are to keep the soil well enriched, to provide a good and deep tilth, to have no bare ground except that consequent on the unsuitableness of the season, and to keep the ground free from weeds.—G. ABBEY.

THOUGHTS ON CURRENT TOPICS.

So much has been written about Grapes that it has come to be somewhat generally admitted that "nothing fresh" could be said about them, but Mr. McIndoe has contrived to say something about the fruit splitting that leads the mind off the beaten track, and I am of opinion that his observations are worthy of attentive consideration. Though I am not prepared to say that excessive root moisture and reckless summer pruning have nothing to do with the cracking of Grapes, I am positive that Grapes, Plums, Gooseberries, Cherries, and Melons will split, and do split, under the influence of moisture acting on the fruit alone. Very heavy night dews and drizzling days will cause the fruit of late Plums, such as Coe's Golden Drop, Ickworth Imperatrice, and others, to split seriously, no matter how dry the roots may be, and sheltering the fruit from wet with effective coverings I have found of unmistakeable advantage; but still it can scarcely be denied that a deluge of rain acting on the roots of Gooseberry bushes causes the fruit to burst extensively. There is, however, a difference between splitting and bursting, and it is that difference that invests Mr. McIndoe's remarks and experiments with interest.

YOUR correspondent tells us "he is not chemist enough to scientifically describe the details to which he alludes on page 225;" but he presumably knows something about the principle of osmosis, or the equilibrium of densities, and I rather suspect he knows more about the subject than I do; still, as it is by no means sufficiently comprehended by the majority of gardeners, young men especially, it may fittingly be thought about in connection with the splitting of fruit.

MR. MCINDOE observes that when a vinery is heavily charged with vapour this soon penetrates the porous skin of the berries and ruptures the then inelastic skin. There is very little doubt about moisture passing through the skin of fruits in my mind, and the process is scientifically termed endosmosis or the transmission of moisture through membranous substances inwards, the outward transmission from the fruit to the air being termed exosmosis. If the air is kept very dry indeed moisture passes from Grapes into it to restore the lost equilibrium and the fruit shrivels; but on the other hand much moisture acting on the fruit from without passes to the interior and splitting occurs. But why is there no escape of the pulp? There often is in the case of Gooseberries when there is much sap pressure, as after heavy rains reaching the roots of the trees; but when Grapes crack, as they often do when the roots are not in wet soil, there is rarely any escape of juice through the ruptured cuticle. The circumstance is, I think, explainable in this way. The skin of certain Grapes is less elastic or more brittle than the cell walls in the interior, and if these are not ruptured there is no outflow of juice, as in the case of dividing an Orange into sections while the juice of the fruit is retained.

SINCE penning the above I have read Mr. Wm. Thomson's communication on page 265. It displays cogent reasoning from ascertained facts, and the experience detailed is valuable. There is nothing whatever irreconcilable with my remarks when this fact is borne in mind that scalding water is not necessary for the transmission of moisture from the atmosphere through the cuticle of Grapes or any other fruit; and if the atmosphere is in a "proper" state the liability to injury will be lessened. I have seen a crop of Madresfield Court Grapes positively ruined by the berries splitting with all the roots of the Vines inside the house, and the soil certainly not wet. In this case the evil was the result mainly of late morning ventilation.

THE important subject of heating, arranging, and preserving hot-water pipes has been introduced by Mr. Bardney in a valuable article on the page above quoted. There can be little doubt of the wisdom of distributing hot-water pipes in structures as far as this can be conveniently done, and it is a costly mistake to unduly restrict the extent of piping in horticultural structures; but your correspondent has directed the current of my thoughts to another matter, which I am constrained to opine is not sufficiently thought about by gardeners and others interested in the subject in hand—namely, the conservation of heat in boilers and mains that are conducted through space that it is not desired to heat. It is undeniably important to preserve the pipes in mains as advised by Mr. Bardney, but is it not worth while also to prevent the escape of heat through them and preserve it for where it is required?

WHEN at the Health Exhibition last year I was interested in the engine shed, where six or eight huge boilers were at work in supplying the requisite force in grinding fuel for the electric light. All these

boilers and the pipes in connection were covered with a cement which kept the surfaces almost cool, and must effectively protect them from oxidation. This, on inquiry, I found was called the Fossil Meal Composition, and was applied an inch thick. It prevented in a wonderful manner radiation and loss of heat; it is said to be similarly effective in preserving cold-water pipes from frost. I should like Mr. Bardney to direct his attention to this material, and as he lives near Liverpool, he might perhaps find time to call at 72, Regent Road, in that city and gain more particulars than I can supply. I suspect he will find that pipes in mains coated with this cement will not only be rendered practically imperishable, but that the heat will be kept inside them—that is to say, with the water boiling in them the surfaces will be nearly or quite cool; the material is further said to completely resist the action of fire, so might be useful on that account in the setting of borders.

MR. DIVERS appears to be unacquainted with indiarubber rings for jointing hot-water pipes. I am able to tell him that by no other method can pipes be fixed with such ease and celerity, provided care be taken in the adaptability of the rings to the sockets—a point of practical importance. These joints are perfectly watertight; but while I have seen the pipes removed with comparative ease, I am told that if they remain long undisturbed that the joints become as firm as those made with cement or any other material. One thing is certain—if the rings are of the right size no one can fail in making a good joint in, say, half a minute, that will last for years, but the rings must not be used close to the boiler. I see in the last issue Mr. Bardney is alive to this matter. As these rings are being very extensively used now, it would perhaps be well if your correspondent would state what he has seen wrong with them in large nurseries. One of the most experienced nurserymen in the kingdom has told me he prefers them to all other joints in his large establishment.

THERE would seem to be something akin to a race for the greatest popularity between Daffodils and Orchids. A few weeks ago it was announced that a Committee of fifty-two persons had been appointed to collect evidence pertaining to the doubling and singling of these flowers, and that experiments should be made at Chiswick, that pilgrimages of investigation should be conducted and deputations appointed for planting the bulbs. This will, no doubt, be very interesting occupation; but what about weather influences? Violets, Primroses, and I think most other flowers have a habit of "going single" when the constitution of the plants is impaired by poverty of soil and a severe check by drought; but perhaps Daffodils may be different. We shall see—perhaps.

AND now we are to have an Orchid conference and a committee of experts—not of fifty-two members, but a weighty body nevertheless. The plan of the proposed exhibition appears to be an excellent one, and doubtless the proceedings in connection therewith will be highly instructive.

The gathering together of these fascinating flowers can scarcely fail to be powerfully attractive, and the display must of necessity be of the most rich and varied character. One injunction of the programme is that exhibitors are requested to show duplicates as little as possible. Little duplicates will certainly take up less space than big ones; but why if the collections are likely to be so overwhelming invite duplicates at all? Possibly, however, the printers have been erring again, and that as few duplicates as possible are requested, which is a slightly different matter.

BY the way, I heard a discussion on the proposed conference the other day, as to the advisability of appointing a sub-committee of practical Orchid growers to discuss matters of interest in connection with the plants, the results to be placed before the superior committee as a sort of senate for their decision thereon. It was thought that the labours of the eminent individuals, who have so many claims on their time, would be lightened, and that small matters of importance would be less likely to be overlooked if growers both in the trade and private establishments were to bring their experience to bear on certain points that it might be desirable to submit to a preliminary discussion. It was considered that as a committee of this kind was found useful in connection with the Apple conference, it might possibly be of service in the conference in question.

I OBSERVE that "H. Notts," has been "amused" with some remarks of a correspondent "T. C. D.," relative to the conduct or degeneracy of young gardeners. I was gratified with the letters that caused the veteran amusement. They were temperate, well expressed, reasonable letters, and a credit to the young man, if he is a young man, who wrote them. I do not admit the degeneracy of the young gardeners of the present day, about which some twaddle has been written, just as there has about the degeneracy of the army. I am of opinion that young gardeners, as a class, are better men to-day than probationers of the same age were at any other period since the days of the "grand old gardener" Adam. They are better educated, and are animated with the same desire to become efficient as ever they were, and certainly not a few who have been placed in positions of responsibility during the past few years have acquitted themselves well. Their conduct as a body is, I am convinced, at least equal to that of any other body of men in the land, and I am not going to join in the song of lamentation over the implied "fall and decline" of the future gardeners of Great Britain.

I LIKED that letter of "C. A. M. C." on this subject, on page 252. I believe in young men working hard and pleasantly, studying attentively, gathering and storing up information that will be of service to them, and who will shame the careless and indolent out of the ranks by their own

better demeanour. They are not less likely to do this by an occasional day in the cricket field, where I am not ashamed to say I have learned many a lesson that I would not willingly forget; and by striving to become "captain" in the field and secretary to the club in now bygone days, I lost nothing as a gardener, but, on the contrary, gained in more ways than can be detailed here, and which "C. A. M. C." and similarly broad-minded individuals will have no difficulty in comprehending. Choose a worthy form of recreation, and then, both in work and play, be earnest—"Go in and win." That has always been the endeavour, and is now the advice of—A THINKER.

PENTSTEMON WRIGHTII.

THIS Pentstemon is taken from the species producing red flowers, and if not the most valuable of its class, it is nevertheless one of the most interesting and distinct of the species. It is a native of Texas, and requires a little protection in winter, for most of the species from thence are somewhat tender; but this will hardly prove an obstacle to its adoption in an age when greenhouse plants are so largely employed for open-air decoration.

It is readily raised from seed, and if sown early the young plants would probably flower the first season. It is, however, best treated as a biennial, the seed being sown in March or April; for although the plant



Fig. 51.—Pentstemon Wrightii.

is reputed to be of perennial duration, and will often survive two or three years, so far as we have seen, it never blooms effectively more than once especially when allowed to ripen seed.

It may be conveniently grown in pots the first season to allow of its protection in a frame during the winter months, but should be planted out the following spring as early as circumstances permit. It grows from 2½ to 4 feet high, and bears a very long branching panicle of flowers. The lower leaves are spatulate, and lengthened at the base into a narrow petiole; the upper ones are almost heart-shaped and sessile; all of them are smooth, and with margins destitute of serratures. The corolla is remarkable for its spreading limb, and has been compared, not inaptly, to that of the Achimenes rosea, which it also resembles in colour. The intense rosy carmine of the flowers, which are borne in June and July, is quite unrivalled in the genus, especially for a few days after expansion subsequently this tint loses a little of its depth, but this rather adds to than detracts from the general effect.

It was first introduced to the Royal Gardens at Kew in 1850, and flowered there the following season.—W. T. I.

ORCHIDS AT WESTBROOK, SHEFFIELD.

It is now about twelve months since I referred in these columns to the above well-known collection, and stated that at one period during the lifetime of the late proprietor, H. Wilson, Esq., it had become one of the

best private collections in the provinces, but that owing to his illness and subsequent death a large portion had been sold. I noticed, however, that at that time a revival appeared to have set in, both Mrs. H. Wilson and her son, A. Wilson, Esq., taking much interest in them, and that interest being well supported and kept alive by their able gardener, Mr. E. Pidsley, who is an enthusiastic and skilful cultivator. Since then, this revival, which has been continued, first, by a very large number of judicious selections and purchases made from time to time during the year by Mr. Wilson, and secondly by the success which has attended their treatment and cultivation by his gardener. Mr. Wilson appears to be a good judge of what constitutes a first-class variety of the different species, and nearly the whole of the numerous, and often very costly, purchases he has made during the year are unusually good varieties. Hence the collection at Westbrook is likely to very soon equal in numbers and far surpass in value the same at its best period during the late proprietor's lifetime.

The following is a list of Orchids in flower at the time of my visit, March 17th:—*Ada aurantiaca*, three plants, one a very strong piece, having seven flowers spikes; *Angraecum sesquipedale*, flowers $5\frac{1}{4}$ inches across, sepals $12\frac{1}{2}$ inches long; *Angraecum citratum*; *Cattleya Trianae*, several varieties; *C. T. alba*, a beautiful white variety, recently purchased from Messrs. Veitch, flowers 7 inches across, petals $2\frac{1}{2}$ inches wide; *Cypripediums Boxalli*, *villosum*, *Haynaldianum*, *Lawrencianum*, *Roezli* and *Sedenii*; *Dendrobiums nobile*, *crassinode*, *crassinode Barberianum*, *lituiflorum* and *Cambridgeanum*; *Lycaste Skinneri*, two varieties; *Laelia harpophylla*, *Masdevallias ignea*, *Shuttleworthi* and *triangularis*; *Odontoglossums Rossi*, *maculatum superbum*, *Cervantesii*, *cordatum*, *triumphans*, *Andersonianum* (this had thirty-four flowers on two spikes), *tripudians*, *luteo-purpureum*, *nebulosum*, three varieties, *Uro-Skinneri* (has been in flower six months), *Alexandrae*, *Pescatorei*, *gloriosum* and *cirrhosum* (of each of these four a many varieties), *Roezli album*, *Lindleyanum*, and *Halli*. Many others are coming into flower in the *Odontoglossum* houses, and in one case I noticed three strong flowering spikes, showing in all fifty-nine flowers from one pseudo-bulb; *Phalaenopsis grandiflora*, a splendid variety, flowers 4 inches across; *amabilis*, three fine varieties; *Luddemanniana*, *Stuartiana*, very fine; *Schilleriana*, three varieties, one has a spike carrying thirty-five flowers; *grandiflora* and *Sanderiana*, beautifully coloured; *Sophronitis grandiflora*; *Vanda tricolor*, with three spikes, nine flowers on each spike.

There was also a specimen in flower of *Anthurium Rothschildianum* with a singularly attractive spathe, coloured white and scarlet, with an orange spadix.—W. K. W.

UNDER GARDENERS.

IN penning a few more lines on this subject, I do so in no cavilling spirit, but with a sincere desire that under gardeners as a body may have justice done to them. I feel sure that many besides myself will resent the calm matter of fact manner in which "H., Notts," has asserted, without having proved, that under gardeners are degenerating. If such really is the case, how is it that we can point to the splendid horticultural productions of modern times? Surely those in subordinate positions are justly entitled to their share of credit to stimulate them to further efforts. Then, again, if your correspondent's assertion is correct, how does he account for the fact that each year so many young head gardeners stand well up in the prize lists of our great shows when they are competing with their elder brethren? Men must be judged by the result of their labours. "H., Notts," seems to think that both men of the present day are sadly behind their predecessors in the way in which they employ their spare time. Perhaps during his career he was thrown in with exceptionally studious men. Speaking from my own experience, I can say, without fear of contradiction, that a large per-centage of the young men in bothies at the present day spend much of their spare time in reading and studying those subjects connected with their calling. I know it is not the case with all of us, but can "H., Notts," inform us of any calling in which all the young men who pursue it are as diligent in the pursuit of knowledge as their interests demand? I think young gardeners, as a body, will bear favourable comparison with any other class.

Surely he would not debar us from some kind of manly invigorating recreation, which is necessary for the well-being of every class of mankind. To be shut up in a garden from one month to another hinders rather than helps advancement, and is apt to give one narrow and ungenerous views of life. It is a well-known fact that many of the greatest men the world has produced have been noted for their love of some kind of amusement as a means of refreshing both mind and body, so that they might be able to throw more life and energy into their more responsible duties. The very nature of a gardener's calling, and the difficulties he has to contend with, often oblige him to spend many extra hours in labour, but with him as well as others, "All work and no play makes Jack a dull boy."

I earnestly hope that in justice to all concerned, now this subject is being discussed, head gardeners throughout the country will, through the pages of this Journal (which always takes so much interest in the welfare of young gardeners), give their candid opinion as to whether under gardeners, with all their advantages, are, or are not, degenerating. To their decision we would bow, but not to the solitary opinion of "H., Notts."—AN UNDER GARDENER.

As a brother under gardener, will you allow me, through the pages of the Journal, to thank "T. C. D., Herts," for his two excellent and timely articles on head and under gardeners (page 206). I am sure every young

gardener who has not only his own but the best interests of his profession at heart, will join me in thanking all those who, from time to time, render us such good service by their practical hints and kind advices through the columns of the Journal. Whether the rising gardeners have degenerated my limited experience prevents me deciding, but it has enabled me to form at least one definite opinion—namely, that in this age we need all the warning and advices our well-wishing friends are giving us. In the present day we certainly enjoy many privileges and advantages which our forefathers did not possess, still I think we are surrounded with many evils and temptations which they were equally ignorant of. In their day gardening was almost exclusively confined to noblemen's seats, scattered throughout various parts of the country. Now it is different. There is scarcely a town of any importance which is not surrounded with the mansions and gardens of its wealthy citizens. Consequently we find a good per-centage of the rising generation labouring in the very midst of all the allurement most likely to unsettle and turn young and inexperienced heads, empty their pockets, and steal much of their valuable time. That this is but too often the case, those whose lot has been cast in such places readily admit, and if fortunate enough to procure a situation in the country, look upon it as a sort of recruiting station, where body, mind, and purse soon realise the beneficial change.

I quite agree with your correspondent that much of the evil effects of such surroundings would be lessened if head gardeners took more personal interest in their young men, especially as regards their occupation in their spare time. I do not propose depriving young men of their liberty, but I think all will admit that, when young, we are too prone to squander much time in useless amusements and even idleness, which might be employed to our own and our employers' profit. Therefore I would recommend the younger members of the craft especially to take earnest heed of the advices they may at any time receive from their elders or superiors touching so important a matter, and however lightly they may think of it at the time, if neglected, they will most assuredly regret it in after life. Someone has said, "that it is the use or abuse of our spare moments that moulds our character." Let each of us make a nobler effort and firmer determination for the future.—D. BUCHANAN, *Culzean*.

THE communication under the above heading in your last issue from "C. A. M. C." is the most sensible that has been penned in connection with this subject. I say this without in the slightest degree wishing to disparage the letters—some of them admirable in their way—that have preceded it. Perhaps it is a little bold assertion to make, but the young gardener appears to have been too much preached at. There is a limit even to this. It is good when advising others to place oneself for the moment in the position of the advised, and ask how we should act under the circumstances.

Of course it is good to endeavour to make ourselves, both practically and theoretically, master of one's profession, even if some spare time be devoted to it; but do not let it be perpetual study, the mind needs some relaxation. Other suggestions of your correspondent seem to provide it in some measure. The young gardener, like his fellows in the great hive of human industry, has faults, but his pecuniary position prevents his going too far. A young man with 12s. or 15s. a week has not much to waste on the frivolities of life.

The concluding sentences of your correspondent's letter, "There are few things like marriage and children to knock originality out of a man who has a small income. His mental growth is kept back by the fear of not being able to make both ends meet," are well timed, and have a deep meaning. Many a man's career has been marred by that prevailing desire to enter the bonds of matrimony. It is truly a bondage to some. Gardeners, young ones especially, perhaps more than any class, should bear in mind the old adage, "Marry in haste, repent at leisure."—J. B.



"W. O., Fota, Cork," writes:—"It may not be generally known that *CELSIA ARCTURUS*, figured in your Journal, page 253, will stand from 10° to 15° of frost with impunity. We have a plant in a mixed herbaceous border which has been out for years with no protection. Both as a pot plant and for open borders it cannot be too highly recommended."

— CAN any of our correspondents furnish "R. G." with a list of ANNUALS FOR A GARDEN IN HAMPSHIRE CLOSE TO THE SEA? The names of a few only are wanted, but they must be such as will undoubtedly succeed in that position.

— THE twenty-ninth edition of the OFFICIAL GUIDE TO THE ROYAL BOTANIC GARDENS, KEW, has just been issued, and presents in a greatly enlarged form a considerable amount of interesting information such as

is seldom found in guide books. An historical notice of the Gardens is given, the most important or remarkable occupants of all the houses are mentioned, and there is a full reference to the arborctum. The chief uses of many plants are mentioned, and quotations are freely introduced from the works of authoritative writers. Numerous illustrations and two plans of the Botanic Gardens and arboretum render the work still more useful. It is altogether a most satisfactory production, and the small price (6s.) for 184 pages of readable matter will insure for it a large sale.

— WE are informed that MESSRS. JAMES DICKSON & SONS, 108, Eastgate Street, Chester, have received a special warrant appointing them nurserymen to the Prince of Wales.

— AT the ordinary meeting of the ROYAL METEOROLOGICAL SOCIETY, established 1850, incorporated by Royal Charter, 1866, to be held at 25, Great George Street, Westminster, on Wednesday, the 15th instant, at 7 P.M., the following papers will be read:—"Report of Committee on Decrease of Water Supply."—[This paper will be in type before the meeting. Any Fellow wishing to take part in the discussion can obtain a copy on application to the Assistant Secretary.] "Report of Committee on the Helm Wind of Cross Fell, Cumberland." "Results on Meteorological Observations made at Asuncion, Paraguay," by Richard Strachan, F.R.Met.Soc.

— WE are desired to notify that the Committee of the NEWCASTLE (STAFFS.) ROSE AND HORTICULTURAL SOCIETY have decided to hold their first annual Exhibition in July next. The Mayor of Newcastle has kindly consented to be President, and the Deputy Mayor Vice-President. Other influential support has been already promised, with a fair prospect of success. A good working Committee is now formed, and will be glad to receive subscriptions to enable them to announce a liberal schedule of prizes. The Secretary is Mr. Wm. H. Ramm, Sutherland Chambers, Newcastle, Staffordshire.

— "J. R. R." sends an interesting note on FERNS IN THE ENGLISH LAKE DISTRICT:—"The English Lake district is rich in Ferns, and of recent years the rarer specimens have been pretty closely looked after by visitors, whilst at many of the small railway stations the officials occupy their spare hours in collecting Ferns, potting them, and disposing of the same to visitors. At many of the smaller stations in the summer months the lamps at the railway stations are filled with Ferns, imparting a very good effect to the platforms, waiting rooms, &c. Scolopendriums, Parsley Ferns, Polypody, &c., may be had by the cartload, without sensibly decreasing the supply, and it has often occurred to me how cheaply the homes of the poor in large towns might be beautified by such if some moderately wealthy philanthropist would take the initiative. The following Ferns are to be found:—Scolopendrium, or Hart's Tongue; Adder's Tongue; Blechnum, or Hard Fern; Asplenium Adiantum-nigrum; Athyrium, or Lady Fern; Beech Fern, Bladder Fern, Brittle Bladder Fern; common Polypody; Limestone Polypody; Polystichum, Oak Fern, Filmy Fern, Holly Fern; Lastreas, or Male Fern; Osmunda, or Royal Fern; Shield Fern, Wall Rue, Moonwort, and Parsley Fern."

— THE NEWCASTLE-UPON-TYNE FLOWER SHOWS for the present year will be held on April 15th and 16th, and July 22nd, 23rd, and 24th. At the first named eighty-one classes are provided, the total prize money being £138 10s. At the summer Show there will be eighty-two classes, and the prize money is £302 4s.; while in addition a Veitch Memorial prize and medal will be offered in Class 48 for six plants in bloom.

— REFERRING to the notes on FRENCH BEANS at page 265, "B." writes:—"It may be of interest to point out this fact concerning the continued bearing qualities of this vegetable when properly managed. The writer recommends three sowings to be made in order to ensure a supply from August until frost. Now I have for many years made only one sowing out of doors, and by following the practice advised in the same article of removing all beans when ready, have never failed with the same plants. I may add, however, that the plants have plenty of room, being 15 to 18 inches apart in the rows."

— VERY beautiful just now is the WINTER GARDEN AT THE FIRS, LEB, the residence of J. W. Larking, Esq., as, indeed, it has been for the last three months. Mr. Sanders does not practise the stereotyped mode of arranging plants in formal order on a greenhouse stage, but plunges the pots in banks of soil amongst huge stones here and there in the greenhouse, yet they are arranged with such aptness and taste that the effect is natural and picturesque. Azuleas trained and untrained, Calceo-

larias, Cinerarias, Primulas obconica, rosea, and others, Cyclamens and Hyacinths—these, with numerous other flowering plants, are employed at the present time to keep the winter garden gay. It is not so much the plants, however, as the artistic arrangement which makes the effect so pleasing and distinct.

— THE most effective plant in the greenhouse at Chiswick is HEBECLINIUM IANTHINUM, which does not appear to be represented in half the conservatories in the land. The heads of lavender-coloured flowers having a general resemblance to Ageratums, but ten times larger, are so totally dissimilar from all other flowers of the period as to render this easily grown plant worthy of more extended cultivation.

— IN passing through the ferneries of Messrs. Veitch & Sons at Chelsea recently our attention was arrested by the stately yet elegant growth of ADIANTUM COLLISII. This is one of the productions of Mr. F. Bause, and is exactly intermediate between A. tenerum and A. gracillimum, having the free growth and fine fronds of the former, with the characteristically elegant pinnules of the latter. This new Fern is excellently adapted for home decorative purposes, and there can scarcely be a doubt that it will make a fine specimen for exhibition.

— MR. JOSEPH MALLENDER sends the following SUMMARY OF METEOROLOGICAL OBSERVATIONS AT HODSOCK PRIORY, WORKSOP, NOTTS for March, 1885:—"Mean temperature of the month, 39.9°; maximum on the 17th, 58.4°; minimum on the 2nd, 23.5°; maximum in the sun on the 17th, 117.1°; minimum on the grass on the 23rd, 17.3°. The warmest day the 27th, mean temperature 47.0°. The coldest day the 2nd, mean temperature 32.8°. Mean temperature of the air at 9 A.M., 39.0°. Mean temperature of the soil 1 foot deep, 40.8°. Number of nights below 32° in shade fifteen, on grass twenty-three. Total duration of sunshine 81.2 hours, or 22 per cent. of the possible duration. We had eleven sunless days. Total rainfall, 1.06 inch. Maximum fall in twenty-four hours on the 3rd, 0.29 inch. Rain fell on thirteen days. Wind mostly from north and easterly points. The temperature has been below the average through the month. In the previous nine years only two months of March have had a lower mean temperature—viz., 1876 and 1883. Again in the same period only two have had a smaller rainfall—viz., 1878 and 1879. Sunshine less than in any of the last four years; warm rain very much needed."

— WRITING in reference to HEATING AND HOT-WATER PIPES, "B." remarks, "I consider all packing more or less ineffective which is capable of being forced out in the course of a few years' working, or that is damaged by the pressure of water in the same period. That has been my experience with vulcanite, lead, and concrete packing, it being a mere question of time when they fail. Iron and sal ammoniac I have employed extensively, and it is the only packing material that I know which I could recommend. The expansion and bursting of pipes, so often pointed out as a bad feature with iron jointing, merely shows that the work has been done in a bad manner. The further drawback which I have seen pointed out as following the use of iron when piping requires to be altered—viz., the difficulty of disjuncting the pipes, is easily solved by cutting the pipes at any point with a cold chisel. I also "have in mind the work of a foremost firm," whose men I have seen engaged by the day trying to chisel out iron packing in order to disjunct pipes when the above simple method of cutting never seemed to have found a place in their minds. As to valves, I like the Messenger. The facings can be renewed at any time. These hold water back."

— THE new and spacious WINTER GARDEN AT THE ROYAL PAVILION HOTEL AT FOLKESTONE was opened to the public on April 1st. This building has been erected with a view to promoting the comfort and convenience of the visitors at the hotel, by affording them an agreeable covered promenade at all times. Great attention has been paid to the arrangements for warming and ventilating the building, and the hot-water apparatus is so constructed that the heat can be regulated, and an even and healthful temperature maintained at any season of the year and in any weather. The building has three entrances, one of which is connected with the hotel by means of a corridor, so that visitors may pass from one to the other without going out in the open air. It is 168 feet long by 51 feet wide, and constructed on the "ridge and furrow" principle, in seven spans, of various widths, the centre one being the largest, and being surmounted by an octagonal lantern 43 feet high. These roofs of different heights, all crowned with ornamental cast-iron cresting and finials, agreeably break up the sky line, and give a graceful diversity to the appearance of the structure. The whole of the work has been

designed and executed by Messrs. J. Weeks & Co., horticultural engineers, of King's Road, Chelsea, by whose tubular boilers the structure is also heated.

— MR. MARTIN J. SUTTON of Reading recently contributed a letter to *The Times* upon SIXPENNY TELEGRAMS, in which he refers as follows to the remark of Mr. Shaw-Lefevre, that "the name and address of the sender are, except in the most abbreviated form, mere surplusage." "A very considerable portion of our business transactions is carried on by wire, not with other houses of business, but with agriculturists throughout the length and breadth of the country. I have to-day had our books examined, and find we have 1060 customers of the name of 'Smith,' of which number no less than 323 are John Smith; 465 'Jones,' 96 of whom are John Jones; 450 'Browns,' 87 John Brown; other surnames such as 'Williams' and 'Robinson,' joined to other Christian names such as 'Richard' or 'Robert,' showing a similar relative proportion of identical appellations. Under such circumstances I think you will not be surprised that we should be of a different opinion to the Postmaster-General as to the address of the sender, except in the most abbreviated form, being mere surplusage. The name in such cases being of little use alone, the address of the sender is practically the only means by which he can be identified."

SPECIALTIES AT UPPER HOLLOWAY.

AMONGST the spring exhibitions in the London nurseries this season that provided by Mr. B. S. Williams has received a large share of attention. Every one of the numerous houses there has contained some attraction, but the special features have been the Orchids, Amaryllises, Imantophyllums, and bulbous plants, which have individually and collectively formed a most interesting display. By a gardener visiting the metropolis the Victoria and Paradise Nurseries is regarded as one of the establishments which must be included in his tour, and whatever season is selected for the journey there is always plenty to be seen in the extensive collections which have gained so wide a fame. From April onwards through the three following months is, however, preferable to permit of an accurate idea being formed respecting the wealth of plants stored in the unpretentious but convenient houses devoted to them. A hurried glance through the chief departments a week since may be briefly described to show how well the season has been commenced.

ORCHIDS.

In connection with the culture and popularising of Orchids during the past forty years no one person has worked more indefatigably and successfully than Mr. B. S. Williams, and wherever these plants are grown or admired his name ranks high as an authority on all practical matters. A life's work has been devoted to them, their culture has been simplified, and their popularity proportionately extended. The fame Mr. B. S. Williams has obtained as a practical orchidist is therefore well merited, for all lovers of this most interesting family of plants owe very much to him, and the debt is being continually increased.

It is somewhat too early to expect the fullest display of Orchid flowers, but amongst Cattleyas, Vandas, Dendrobiums, Cypripediums, and Odontoglossums there are numerous beautiful species and varieties in bloom, while many others are fast approaching that stage, and will maintain an increasing show of flowers for several months. This is particularly the case with regard to the Cattleyas and Lælias, of which innumerable sheaths are showing that will shortly render several of the houses extremely gay. Many fine varieties of *C. Trianae* are in good condition, bearing large brilliantly and delicately coloured flowers, while the handsome healthy plants of *C. Mendelii*, *C. Warneri*, *C. gigas*, *Lælia purpurata*, and scores of other later-flowering forms are promising more satisfactorily. Of the charming white *Lælia anceps*, importations of which were sold a short time since, Mr. Williams has secured a fine stock, for, highly valued as this choice variety is at the present time, the demand will greatly increase as its merits become better known. White-flowered Orchids of all kinds are rapidly advancing in public favour, and in several cases, as for instance with *Lycaste Skinnerii*, while ordinary forms can be purchased for a few shillings, the pure white variety (which is also well represented in the Holloway collection) realises a greater number of pounds. All the varieties of *Lælia anceps* are esteemed for their beauty and durability, and it is therefore not surprising that *L. anceps alba* is becoming so general a favourite.

Vandas succeed admirably at Holloway; stout vigorous plants, well clothed with foliage down to the pot, are attractive by the distinctness of their habit even when out of flower. Just now, however, there is a particularly good show of *V. tricolor* and *V. suavis* varieties, several of the plants bearing numerous fine spikes. The magnificent Dalkeith variety of *V. tricolor* is in especially good condition, one plant having four spikes of nine flowers each, large and superbly coloured. The sepals and petals are white with bold rich chocolate spots and a bright crimson lip, a charming contrast which renders it quite distinct from all other varieties and greatly superior to the majority. *V. tricolor insignis* is also beautifully marked, though the lip is of a paler tint. *V. suavis* with its purple-spotted flowers also adds materially to the interest of this house. Some of the tallest plants have been cut down and repotted this season,

and under good care are rapidly recovering from the check. In skilled hands this operation is perfectly safe, and might be advantageously adopted in some private collections where plants have become excessively tall, and perhaps, as often happens, bare of leaves for nearly half their height.

Amongst miscellaneous Orchids in flower the Dendrobiums are prominently noteworthy, as they contribute largely to the floral display in several of the houses. *O. fimbriatum oculatum* with racemes of golden flowers, the lip deeply fringed and blotched with maroon in the centre, is especially beautiful; the well-known and useful *D. thyrsiflorum* with numerous racemes of white and golden flowers is similarly attractive. The celebrated *D. nobile nobilius*, recently certificated at the Royal Botanic Society's Spring Show, is also flowering, and in regard to this plant Mr. Williams states that it was obtained four or five years since in France. *D. Wardianum*, with massive and highly coloured flowers, the bright purple *D. Freemani*, and graceful *D. Devonianum*, and several others are flowering more or less freely. One of the most elegant and pleasing of small Orchids is *Ionopsis paniculata*, which has light graceful panicles of blush and pale purple flowers that are seen to the best advantage when the plant is suspended from a roof of a house. The fragrant *Dendrochilum glumaceum*, which should be included in every collection of Orchids, fills the air with its pleasing perfume. The handsome yellow and brown *Oncidium sarcodes*, abundance of *Cypripediums*, the late-flowering *Calanthe Sanderiana*, and many others are also attractive in the various houses.

In the cool house *Odontoglossums* and *Masdevallias* are grandly repre-



Fig. 52.—*Odontoglossum aspersum*.

sented, the fine stock of these Orchids including all the best varieties obtainable. That general favourite, *Odontoglossum Alexandrae*, has received particular attention, none but good well proved varieties being tolerated. They are of several types, pure white, heavily spotted or flushed with rose, each of which is in its way equally beautiful, and finds its special admirers. The flowers are distinguished by their substance, purity, and well-filled outline, thinness of petals or general roughness of flower being sufficient to cause any variety to be at once excluded. *O. Pescatorei* is largely grown, and though the varieties are less numerous some are equally beautiful, being charmingly spotted with purple in the lip. One notable little Orchid of the *O. Rossi* type is *O. aspersum* (fig. 52), which has been flowering freely during the winter. It is regarded as a natural hybrid, of which one of the parents is probably *O. Rossi*. There is, however, also some approach to *O. maculatum* in the colouring of the petals. The sepals are heavily spotted with rich brown, the rest of the flowering being white, or with a yellowish tinge, and the outline of the flower resembles *O. Rossi*, or rather the variety known as *majus*. The dwarf *O. Oerstedti*, with its diminutive white flowers, the showy gold and brown *O. triumphans*, the white-lipped *O. Halli leucoglossum*, the bright rosy and distinct *O. roseum*, and numbers of others that cannot be referred to, are also flowering.

IMANTOPHYLLUMS AND AMARYLLISES.

Last year some reference was made to the handsome structure that it was intended to devote to Amaryllises and Imantophyllums in this nursery, and now it is filled with these plants it proves that the good expectations formed concerning it as an additional attraction were fully justified. The house is span-roofed in two divisions, each nearly 40 feet long, with a centre and two side stages in the first division for the Imantophyllums, and similarly placed beds for the Amaryllises in the second. In very few establishments is a house devoted to Imantophyllums, and it is only when numbers of plants are thus seen together that an adequate idea can be formed of their recommendations for decorative purposes. For some years Mr. Williams has given special attention to them and all the best of the continental novelties have been secured, most of which are distinguished

by the great size of the flowers and their bright shades of orange scarlet. Over 100 scapes are developing, and when it is remembered that some of these have twenty flowers in a head an idea may be formed respecting the effect they produce. One of the finest is General Gordon, which is of extremely vigorous habit with large beautifully formed flowers, the petals broad, round, and rich orange scarlet in colour. Ambrose Verschafelt is similarly handsome in size and form, differing slightly in colour, as also do several other named varieties, such as robustum, Lindeni, miniatum splendens, Martha Reimers, and others. A hybrid between the last named and intermedium is noteworthy for its rich scarlet colour, the flowers though small being excellently formed, and it will probably produce a distinct race of Imantophyllums of great use in gardens. It is strange that these plants have not in England yet obtained the attention they deserve, for besides being easily grown their flowers are extremely showy and last for a great length of time. On the Continent they are, however, duly appreciated, and they are now steadily gaining admirers here.

The Amaryllis house is filled with plants, the majority of which have reached the flowering stage, and in the centre bed some hundreds of scapes are bearing expanded flowers, while others are rapidly advancing

the miscellaneous stock of greenhouse and stove plants also occupy much space. All are equally healthy, proving by their clean and satisfactory condition the carefulness of the treatment they receive. In the large conservatory the Hyacinth, Tulips, and Narcissuses, which delighted the visitors to the Kensington and Regent's Park Shows recently, have during the past week been attracting numerous admirers to the nursery, and the general opinion amongst those who have been familiar with the spring shows for some times past is that finer collections of bulbs have never been seen at Upper Holloway.

NOTES FROM MY GARDEN IN 1884.—No. 2.

GREENHOUSE.

AND so your correspondent "Thinker" thinks I must be a melancholy man. I imagine those of your readers who know me must rather smile when they think of what he has evolved out of his inner conscience concerning me. He grounds his opinion, however, on a fact which gives some colour, he imagines, to his conclusions—that I do not hesitate to



FIG. 53.—MR. P. S. WILLIAMS' AMARYLLIS HOUSE.

and will prolong the display for some weeks. During a long experience with Amaryllises Mr. Williams has perseveringly worked to improve the colours of them, and an extremely useful strain has been secured. The type of this is the variety Dr. Masters, which was certificated several years ago, and has since then become a great favourite in many gardens. The flowers are of medium size but very neat in form, of a bright yet rich scarlet colour, which is uniform and unbroken to the centre. This is a distinctive character, and when to it is added that the plants are of moderate height and very floriferous it will be understood that they possess some most important qualities as garden plants. All the other principal types are represented, including the Leopoldi forms, the rose and white-flowered varieties, and those with netted flowers, some hundreds of unnamed seedlings of considerable beauty being noteworthy amongst the older varieties. A sketch of this house, as seen from one end and looking towards the Imantophyllum house, is given in fig. 53, and conveys a good idea of its appearance.

Nearly every house contains a speciality or is devoted to a class of plants; for instance, hybrid Rhododendrons of the greenhouse type have a large house appropriated to them. Hardwooded plants and Heaths are equally well provided for; Camellias, Palms, Dipladenias, Ixoras, Ferns, and Pitcher Plants fill numerous houses, several of considerable size, and

record my failures. I never can see the good of representing everything as *couleur de rose* when there are some damaging facts to be recorded. There is a story of Beau Brummel when he had introduced those starched or lined cravats which made him the envy of all swells, that a friend called on him one day when he was making his toilet, and was lost in admiration at the successful tie of one he had on. Turning to a corner of the room he saw a whole heap of crumpled cravats. "What are those?" was the question at once asked. "Oh! these are my failures;" and I doubt not the enamoured imitator of the Beau thought twice before he ventured recklessly on a fashion which involved so much expenditure. Now in the same way I think it is far preferable to tell what difficulties one has met with than to let people imagine that they can get on without any trouble or loss. Take for example that about which I wrote recently, the Gladiolus. I have been roundly rated by some because I maintained that they were subject to a disease which often destroyed our fairest hopes, and that they were about the most disappointing flowers that one could grow. I was told that I did not know how to grow them; that the disease was a fancy of my own, though one of our oldest botanical physiologists had described it; that it was simply degeneration of the bulb, of exhaustion. Well, what is the fact now? I have known most, if not all, of the amateur growers of the Gladiolus during the last twenty years, and one and all, with the ex-

ception of Mr. D'obree of Wellington, have abandoned their culture because of the disappointment occasioned by the continual loss of bulbs. When a lover of flowers sees a magnificent stand of these flowers exhibited he determines to go in for them; "he takes the shilling," but like the recruit he soon finds out that it is not all sunshine and glory; better be honest with him, then, and tell him what he is to expect. In writing, however, of my little greenhouse I have no melancholy things to record. It has been as usual a great success, and I believe there is no house of the same size out of which the owner gets more pleasure than I do out of mine.

I have again been very successful with my Disas they gave me some fine blooms, and have again largely increased. I have been able to distribute it to some friends, and the pans are again full of plants, young and old, with a promise of good bloom. A controversy was aroused concerning it in a contemporary because of inferior varieties which are in cultivation; indeed, it is by some questioned whether that to which I allude is not a distinct species. At any rate, I can only repeat what I have said elsewhere, that there are some varieties of Disa which, compared with others, are not worth growing. As I am mentioning Orchids, I may say that last year I attempted to grow a few more. I had a couple of plants of *O. Alexandræ* and half a dozen *Masdevallias*; these were placed at the end of the house close to the *Lapagerias*; they were kept moist and somewhat shaded. The temperature of the house never goes above 40° even at night in the winter months; the fire is not kept up continuously, and yet I was rewarded with blooms on the *Odontoglossums* and a few of the *Masdevallias*. Of the latter, however, *M. tovarensis* succumbed to the cold. Of course, the spike of *Odontoglossum* was small, and would have perhaps raised a smile on the face of a grower of Orchids; but that one must put up with, still I think it an achievement to have done as well as I did.

The *Lapagerias*, of which I wrote last year, have done well, although the intense heat of the summer was against them, especially as they were trained up to the roof of the house. So strong was the effect of the light that the colour was almost taken out of the red variety in some cases, and I can only conclude that while it may like the shade it is sufficiently hardy to bear the very reverse. One of your correspondents said that I might do very well for a year or so, but what was I to do when they filled the pots? Well, I have taken them out of these and put them into a wooden box, which is placed on the footstage, and there will be plenty of room for them for a few years. They are again making fresh growths, and are very satisfactory. I find the white variety quite as hardy and vigorous as the red one. The plant of *Maréchal Niel* which I have in the little annex gave me some sixty or seventy excellent blooms. It has clean gone through the pot and rooted itself in the ground, so that I can only feed it by supplying surface dressing and liquid manure. It is again rapidly developing its buds, and I hope they will be over before the Vine begins to push, so that it will not be interfered with.

Among the plants which I have been most pleased with in my greenhouse have been the *Freesias*. In writing about them last year I said I feared that they would prove intractable like the *Ixias*, and not flower well after the first year of cultivation. In this I have been agreeably disappointed. They have flowered well this spring, and even pots of seedlings of small size have grown fair heads of bloom. This being the case, one may fairly pronounce them to be amongst the valuable introductions of recent years. I have not grown them to the same perfection as my friend Mr. Tymons; but I am convinced that though they may succeed better when grown in warmth, it is not absolutely necessary for them, and their curious refracted spike of blooms, with their purity of colour and deliciousness of perfume, make them really a great acquisition, especially as they come in the earlier part of the year. *Allium neapolitanum* is another very valuable bulb, producing a good umbel of pure white flowers, and lasting a long time. We are astonished at the smallness of the bulbs which produce these flowers.

I have made one alteration in my manner of filling the house in the later summer months, when I used to depend a good deal on Lilies in pots; but I have eschewed their cultivation in that style. They are, as most people have found them, not very amenable to pot culture, and as they do fairly well in my light soil I have relegated them to the borders. I was the more ready to do this, as many of them when in flower were too late for my house, and consequently could not be well seen. There is one drawback in trying to grow *L. auratum* out of doors—that if the weather is bad the flowers soon become soiled by the rain; but these, moreover, except in some favoured places, can hardly be treated as more than an annual, and even now, as most people buy their *Hyacinths* annually, so they buy their *auratums*. Lacking these, I have supplied their place with some of the Meteor strain of *Begonias* of Messrs. Sutton of Reading, and with dwarf plants of *Abutilon*. Amongst the very best of plants for early spring or winter blooming is the hardy *Doronicum austriacum*. I know nothing of its colour to at all equal it, and it is invaluable for cutting. The colour is of the brightest yellow, and *Etoile d'Or Chrysanthemum* looks washy alongside of it. I turned my plant out in the summer and lifted it again in the autumn.

I have flowered some of the new varieties of the show *Pelargoniums*, but I really can see but little advance. There is no new strain hit upon; and although to the practised eye some slight improvement may be traced, I fancy it is so very slight that few persons would see it. The same may be said of *Zonals*. I have had some of the newer varieties, but I cannot say that I see much improvement in them; in fact, as one looks round the question seems difficult to answer which is the next flower to be improved.

This brief record of my greenhouse experience for the past year will show that in a small space a good deal may be done, and friends who come to see me from time to time are amused at the changes

that take place in the house. I hope, too, that this record will cause your correspondent "Thinker" not to believe I am the "melancholy Jacques" he fancies.—D., Deal.

MANAGEMENT OF HORTICULTURAL SOCIETIES.

I FULLY agree with Mr. A. R. Cox (page 229) "that horticultural societies are established to promote and encourage the cause of horticulture" and as such those who claim a foremost position in the country similar to the Liverpool Horticultural Association, I venture to assert, ought to invite the co-operation of all to compete in its exhibitions.

I am somewhat surprised at Mr. Cox, who is not easily daunted, admitting that "its own members, through no fault of their own, are debarred from competing with the slightest prospect of success." The schedule of 1884 contains but eight classes of vegetables of outside culture, Tomatoes and Cucumbers being grown under glass. For each of these eight classes three prizes are offered with the following results:—That growers within the ten-miles radius of Liverpool secured five first, four second, and three third prizes. Surely that is with some success. Last year was undoubtedly a splendid fruit season, the entries exceeding all previous autumn shows, in some classes reaching to as many as sixteen. The twenty classes for fruit are not open as might be understood by the majority of the readers of the Journal, the whole schedule, with the exception of one class (for a bouquet), being confined to amateurs. The statistics in this case are not so favourable to Liverpool growers as the vegetables, owing probably to a great extent in the grand season for quantity, colouring, and finish of all kinds of outdoor fruit. The classes for Apples and Pears number ten, Liverpool taking sixteen prizes out of the thirty offered. This is, I must respectfully urge, a sufficient answer that there is a good prospect of success. Undoubtedly some districts have grave disadvantages to contend with, such as soil, position, and atmosphere, but I venture to think that localities such as Magull, Wallasey, Spital, and Eastham ought to produce splendid vegetables and hardy fruits. Another important consideration is that all other large societies throw open their schedules, and in most cases free; and from the number of Liverpool growers who exhibit at these it appears to me hardly creditable to refuse the same advantages to outsiders. "Do as you would be done unto" will apply well in this case. Strong competition means a good show, and that will draw a large attendance, which is one of the objects to be at all times wished for.

I regret if either Mr. Cox or the readers of the Journal should accept the sentence as quoted to tend in any way to bring the Liverpool gardeners into discredit; these valuable columns from time to time would refute any such idea. Liverpool, I firmly believe, will hold its own in any department of horticulture, and I think if open classes in all sections were continued a large proportion of the awards would go to home productions.—R. G. WATERMAN.

I FEEL much obliged to "A Northerner" for his kind attention to my query addressed to Mr. Waterman. Your correspondent is evidently no stranger to Liverpool or the exhibitions held by its Association; therefore it is the more remarkable he is not more deeply impressed with the difficulties of the neighbourhood in relation to horticulture. The majority of the gardeners of the district are situated perhaps not more than four to five miles from the Exchange, thus being affected by the smoke, sulphur, &c., from the many thousand chimneys of the city. On the opposite side, and at no greater distance, are emitted the obnoxious and destructive fumes from the chemical works of Runcorn, Widnes, and other places. All around our immediate vicinity forest trees may be seen dying by hundreds. Conifers are a sad failure, if planted they only die lingeringly. Some few are certainly to be met with, but they are anything but ornaments. I might write more in this vein, but perhaps I have stated sufficient to prove we are not labouring in the paradise some are inclined to think. "Northerner" would be quite right as to the contention of Liverpool gardeners being able to hold their own against all comers if he confined it to the many productions grown under glass; but when they have to depend on the mercies of our external atmosphere, there the contention must end. Perhaps the most difficult and at the same time most important of our outdoor operations is the kitchen garden. Hundreds of my neighbours can bear me out as to the difficulties of growing many kinds of vegetables, especially such as Carrots and spring-sown Onions, while Parsley requires more skill in its cultivation than many of the choicest Orchids. Still, in face of these difficulties, "Northerner" would have us believe it is no discouragement to be beaten by those who are situated in the most favourable localities.

I remember the first exhibition held by the Association and referred to by your correspondent. Messrs. Iggulden, Richardson, and Hinds were the exhibitors of vegetables from a distance, while the produce of local competitors was certainly very inferior to that staged by the three named exhibitors. I also readily admit that considerable improvement has been perceptible in the local exhibits at the last two or three shows, and I am asked to explain the cause of this improvement. The cause, as "Northerner" is well aware, is not far to seek. It is a further proof, if such were needed, of the grand stimulating effects of horticultural societies. It is that spirited, but friendly, rivalry created by competition which has been the cause of improvement in our local vegetables. But surely it will be admitted that the improvement has not been confined to vegetables. Has not the advance been general? Indeed, are not the strides made in some other departments far in advance of those made in vegetables? The improvement made since 1882 has not been sufficiently

marked to hold out hopes of surpassing favoured visitors. Perhaps at the last summer show the local vegetables were somewhat in advance of previous years, in which the exceptionally fine season may have played a part. Yet even then at their best, what comparison did they bear to the first-prize collection staged by Mr. Lambert of Shrewsbury? I think it will be admitted not a very favourable one. I do not object to being surpassed in two or three classes, as suggested by "Northerner," for probably I have been defeated as many times as most gardeners during the few years I have been an exhibitor. What I do object to is having imposed upon us an impossible task. Give us something like a prospect of competing on equal terms, then I have no objection to being honestly defeated.

Reference is made to the Shrewsbury schedule, but this is not perfect; indeed, generally speaking, it cannot bear comparison with Liverpool. Are there no restrictions at Shrewsbury? But I think framers of schedules should pause and consider what constitutes "restriction." It must not be thought that the "broader and more liberal principles" suggested by "Northerner" are the wisest or surest means of attaining the desired end. Surrounding circumstances must be considered, all matters well weighed in the balance, and not rush headlong to the conclusion that, because it looks well on paper, we must throw every class open irrespective of local circumstances. In a word, my contention is that to impose upon Liverpool gardeners and others in like circumstances the task of competing with all comers in collections of vegetables and dessert Apples and Pears is "restriction" in its most severe form. Your correspondent probably attended the two last Chrysanthemum shows of the Association; if so, what comparison did he draw between the hardy fruit exhibited from Kent and that staged by local exhibitors? Certainly the difference was very conspicuous to my mind and that of many others.

"Northerner" asks if I think horticulture in the neighbourhood of Liverpool is advanced by provision being made only for nurserymen and professional gardeners. My reply is that I think it is to a very appreciable extent; but whether it might be further advanced by special provision being made for cottagers and amateurs I am not quite prepared to say. There are, however, several Window Gardening Societies in and around Liverpool which are doing useful work.—A. R. Cox.

CULTURE OF CELOSIAS.

Now is a good time to sow seeds of *C. pyramidalis*, *aurea* and *rubra*, when the plants are required to bloom in the autumn. They are not grown in so many gardens as they deserve to be, and this perhaps may be attributed to the many worthless varieties that are sent out under the above names. We are fortunate in having a good strain of *Celosia pyramidalis*, and we make it rule to save seed from none but the best varieties, and by so doing we have seldom a worthless plant in our collection. We sow the seeds in pots about the beginning of April, and plunge them in a bottom heat of 80° until they have germinated, after which they are removed to a shelf near the glass in the propagating house, where they remain till they are ready to be pricked off into pots or pans. We use a compost of equal parts of loam, leaf mould, and peat, with a good sprinkling of river sand added, and the pots or pans are again plunged in bottom heat for a few days until the roots have taken to the soil. We then remove the plants to the shelf near the glass, keeping them well watered and syringed until they are placed in 4-inch pots. The compost employed then is equal parts of loam, leaf mould, peat, and cowdung, with a dash of rough river sand. They must not be allowed to become root-bound at this stage or they will flower prematurely. If practicable, we keep the pots half plunged, and when this cannot be done we stand them on a moist bottom, which saves watering and also benefits the plants. When dwarf specimens are required we pinch the points out of the plants when they have grown 3 or 4 inches high, but we seldom practise this system. We allow the plants to grow vigorously, and can always manage to keep a good succession of bloom by employing pots of various sizes for flowering the plants in. The sizes range from 6 to 10 inches, but the latter should only be used when large specimens are required. An 8-inch pot we find most serviceable for ordinary plants.

The *Celosia* grows best in a light house with a warm moist atmosphere, as few plants are more subject to the attacks of red spider, and they must be carefully watered at all times, never allowing the soil to become dry. Excessive watering must be equally guarded against to prevent souring the soil, as few plants will show signs of ill health sooner than these when over-watered. When the pots are full of roots the plants are greatly benefited by weak liquid manure applied at every alternate watering.

They should always be supplied with clear water before applying the liquid manure, as the roots are easily injured by strong supplies, and the water must always be about the same temperature as the house in which the plants are growing. After they begin developing their feathery inflorescence they can be gradually

hardened off before being placed in the conservatory, where they will continue for a long time in bloom. Their culture is simple, and when well grown they have few equals either for their flowers or as decorative plants.—A. SMITH.

THE WEATHER OF 1884.

MR. EDWARD MAWLEY'S excellent annual, giving the meteorology of the year as observed in the neighbourhood of London, is now issued (Edward Stanford, 55, Charing Cross), and, as usual, it contains a most careful review of the weather during the past season. The special characters of each month are given in tabular form, such as the barometric height, shade temperature, humidity, wind, rain, duration of sunshine, and variation of the temperature as compared with the Greenwich average of twenty years. Some general remarks also accompany each month, and a *résumé* for each of the four seasons is given, together with a comparison with the preceding year. A table is also given showing the meteorology of the year at a glance.

In the course of his concluding remarks Mr. E. Mawley thus refers to the weather in its relation to agriculture and horticulture:—

For the agriculturist the year 1884 cannot, I think, everything considered, be regarded as having been by any means a remunerative one, although no doubt a decided improvement on many recent years. Yet it is not difficult to see in the weather of the past twelve months several features of an encouraging kind. For instance, in all the work of preparing and cleaning the land it proved the best known for some years past. The paucity of rain throughout its course must also have greatly tended towards an improved condition of the soil, which had become impoverished by a long series of wet years. On the other hand, this continued dry weather, although beneficial to the land itself, proved the reverse to all the farm crops growing upon it except the Wheat, which in the metropolitan counties at least appears to have been rather above average in yield, and of excellent quality. This important cereal is, however, especially when planted under such favourable conditions as was the case with the last crop, well known to resist drought better than any of the others, and indeed in most instances to be greatly benefited by prolonged dry weather. Barley, Oats, Peas, and Beans, although fairly good in quality, were as a rule more or less under average. In the early part of the year, owing to the very open winter, all kinds of fodder were unusually abundant. The hay crop, through the dry spring, was necessarily very light, but in most cases gathered in excellent order. Roots generally had very unfavourable conditions owing to insufficient moisture at sowing time, and from this cause, and the absence of good rains afterwards, were as a rule small and scanty. Potatoes, although poor in quality, again proved a heavy crop, and were even freer from disease than in 1883. In the autumn, Wheat planting, except on the dry soils, was once more carried on very satisfactorily, and at the close of the year the young Wheats were looking as well as could be desired.

In the garden the horticulturist had many adverse circumstances to contend with, in front of which must be placed the want for weeks together of any rains sufficient to bring about more than a surface wetting of the ground, and that too during some of the hottest months of the year. Next in order should be placed those bitter winds and frosts of April, which in one or two nights entirely destroyed the prospect of a most abundant crop of our so-called hardy fruits. And scarcely had the fruit trees begun to recover somewhat from this disaster than they, together with Roses and many other plants, were subjected to an exceptionally severe attack of green fly, which crippled much of their young foliage. In the flower gardens the dry weather was much felt throughout the year, but during the late autumn they were, owing to the open character of that season, looking particularly gay for the time of year. Throughout the winter and early spring vegetables were unusually abundant, but their growth after this was greatly retarded by the dry condition of the ground. Among kitchen garden crops those noticed as being least able to withstand a prolonged drought were Peas, Lettuces, and Parsley. At the close of the year the wood of fruit and other trees, as well as that of hardwooded plants, had become most satisfactorily ripened. The yield of fruit may be stated as follows:—Strawberries, Apricots, Peaches, Nectarines, and bush fruits about an average crop, while such fruits as Plums, Cherries, Apples, Pears, and Nuts were all below average, and in many cases their yield was very poor indeed.

During the early months of 1884 the number of "survivals" from the previous year amongst wild flowers was singularly large. Spring flowers also abounded, and made their appearance in most cases very much earlier than usual. The cold weather of the previous month, however, caused the dates in May to be only about average. Throughout a great part of the summer the hot dry weather forced most of the wild plants into blossom before their accustomed time, but from the same cause their duration of flowering was comparatively very limited. Consequently, when the autumn came the banks, woods, and fields were looking particularly bare of blossom. In fact, up to the close of the year, although the weather continued in general very open and mild, yet but few flowers of any kind were to be had, and, strange to say, none at all of those early spring varieties which in mild winters almost invariably appear in December. During the early summer the foliage of timber trees was noticed as being singularly luxuriant, and in October the autumnal tints were, if anything, even finer than in the previous year.

Taking the year 1884 as a whole, it was by no means a favourable one for insect life. The fact seems to have been that the larvæ and pupæ of many insects lay so much at the mercy of the birds and their other enemies during the very mild winter of 1883-4 as to make it almost an impossibility for any unusually large numbers, at any rate of grubs or caterpillars, to make their appearance during the following seasons. In June and July there was a perfect plague of green fly, which did considerable damage to fruit trees, Roses, &c. Ants, as might have been expected in so dry a summer, everywhere abounded. In the north of London the larvæ of the daddy longlegs (*Tipula oleracea*) are reported as having done much damage on lawns and pasture lands. Owing to the long continuance of dry weather, this proved but a poor year for bees and other Hymenoptera. Butterflies

were also by no means numerous. On the other hand, in some localities slugs and snails appear to have been particularly troublesome in gardens.

Mr. Mawley's little work is most useful to all who are in any way interested in meteorology, and forms a concise and reliable chronicle of the weather.

EUCHARIS AMAZONICA.

THIS lovely and floriferous stove plant is just now considerably exercising the minds of many horticulturists on account of a disease, said to be contagious, having made its appearance amongst the plants under their care. The deserved popularity of this chaste "Lily of the Amazon," is my excuse for dwelling at some length upon it, with the object of suggesting some possible causes of the disease, and of directing attention to a more rational method of culture, as being more conducive to the permanent welfare of the plant and its progeny than the present too prevalent system of alternate "roasting and starving" process.

It seems to me that the Eucharis is amongst plants cultivated for the flowers what the Vine is for its fruit and the Potato for its tubers—a very accommodating, and therefore ill-used plant. Because it has apparently withstood all kinds of treatment without injury year after year, it by no means follows that no actual injury has been done, but rather that, although the flowering and parent bulb may show no signs of distress, its offspring may be slightly more feeble and debilitated. This debility may be transmitted from generation to generation in an increasing ratio, so long as the system of cultivation remains the same, until they fall a prey to disease and utterly collapse, owing to their weakened and exhausted tissues. It is not my intention to condemn the system of cultivation, because I know that too frequently gardeners are expected, if not absolutely required, to produce results they know to be detrimental to plants under their charge. If, however, they are determined to exact more than the plants are naturally capable of producing without physical injury, then such cultivators must be prepared for the results.

Eucharis grandiflora is said to be a native of Choco or Choconta in New Grenada, now known as the United States of Columbia. These States extend from $1^{\circ} 30'$ south latitude to $12^{\circ} 25'$ north latitude, and between the meridians $69^{\circ} 10'$ and $82^{\circ} 18'$ west longitude. The surface of the country is mountainous in the north-west and hilly elsewhere. The climate is superb on the highlands and in the valleys of the Magdalena, but along the coasts and on the plains it is hot, moist, and unhealthy; consequently as there are great varieties of altitude, so also are there great variations of temperature. Columbia, Ecuador, Venezuela, and a great part of Brazil being close to, and in some parts directly under the equator, are also within the isothermal lines of 77° of temperature for very nearly all the year; thus it will be seen that although there are great variations of temperature in altitude, yet the temperature at specified altitudes is somewhat uniform the year round. This is exemplified in the native homes of some of our most lovely *Odontoglossums* and beautiful *Masdevallias*, temperatures and climatic conditions our Orchid growers endeavour to imitate and keep uniform, knowing full well the disastrous results sure to follow any prolonged extremes of temperatures. The Eucharis comes from the same country, but is found in lower and therefore warmer positions; immense plains and forests stretch east from the Andes to mouth of the Orinoco, a distance of about 1000 miles, and south from the east range or cordilleras of the coast to the plains of the Amazon near the equator. They are said to be 350,000 square miles in extent, and are so low and flat that their surface is flooded during the rainy season. The productions of these higher portions of the plains and cleared portions of forest are chiefly Maize, Wheat, Rice, Plantains, Coffee, Cacao, Sugarcane, Cinchona, Cotton, &c. These districts are within the zone of periodical rains, or alternate wet and dry seasons, the wet season being the growing and flowering season, and the dry season the fruiting and resting period, there being no real summer and winter, as experienced in the temperate zones, and as already stated, the temperature varies but little between the growing and resting seasons.

If the foregoing facts accurately represent the natural conditions of growth of the subject of these remarks, and I think they do, is it to be wondered at if the plants grow weaker and weaker under a thoroughly exhausting system of culture? They are plunged in a bed of tan or leaves with a temperature of 85° to 90° , and are supplied, not very judiciously it may be, with water at a temperature varying from 50° to 70° , according to circumstances and the carefulness or otherwise of the attendant, and given a mean atmospheric temperature of 75° ; they are then

placed in a cold greenhouse or even frame, as we have recently read, to rest. Their naturally large sap-vessels charged to the fullest, from the tips of their leaves to the tips of their roots, the vital functions of both roots and leaves have received a rude check, owing to extreme change of temperature, and they are practically at a standstill. Notwithstanding this cold water is still applied at certain intervals, whether the plants can utilise it or not, and so the plants are starved to all intents and purposes, instead of being kept warm, and assisted to elaborate the crude sap with which they are fully charged, to the maturing and perfecting of the perennial bulb, and thereby assuring abundance of fine blossom.

After the usual rest the Eucharises are required in flower by a certain time, a month to six weeks being the time allowed to force them into flower; they are again plunged in bottom heat, and as soon as the flowers are expanded, in all probability they are placed in draughty corridors, entrance halls, staircases, &c., for a week or more, where the air is dry as well as cold. The foliage droops and commences to shrink, and as soon as returned to their growing quarters many of the leaves rapidly turn yellow and finally decay. The cultivator cannot be held responsible for all this, inasmuch as they are grown for this particular object—viz., house decoration, but I would ask this question, Is not the treatment of the Eucharis, as above described, very different from what they would experience in their native habitat? if so, cannot something be done to mitigate some of the evils?

I do not believe in plunging Eucharis at all, and I strongly object to their being submitted to 10° more heat at the roots than they receive amongst their foliage; the free exit of water is more likely to be impeded when plunged, and a supply of fresh air to the roots, small as it may be, is prevented from passing through the pores of the pot—things apparently trivial, yet in the aggregate making all the difference between disease and health, failure and success. I do not even attach very great importance to the kind of compost used, provided water and heat be applied judiciously, but there is no doubt, all other conditions being equal, the most suitable compost will produce the best results.

Eucharis grandiflora has been a great favourite of mine for fifteen or sixteen years, and I have never yet failed with it, although it is possible I may yet fail like other people. During the growing season my plants are grown in the stove with a mean temperature of 78° in the summer and 65° in winter, syringed twice a day and watered with great care. In the resting season they are moved into an intermediate house with a mean temperature of not more than 10° less than that of the stove, water is still more carefully applied, only being given just often enough to keep the foliage plump and fresh. They are allowed to remain in this house from two to three months, and are moved into the stove again about six weeks before being required in flower. I only wish them to flower twice a year, but sometimes they flower three times. To give an idea of the health of my plants I may state that the average length of the "blade" of the leaf is 1 foot 7 inches, and 7 inches in width, the length of the leafstalk is about 1 foot 5 inches, thus giving a total length of 3 feet; the colour of the foliage is very dark.—AMARYLLID.

A GOOD TYDÆA.

FOR purposes of decoration *Tydæa Madame Heine* is one of the best that can be grown, and should have a place in all gardening establishments where a display of flowering plants is required during February and March. *Tydæas* are scarcely needed except for variety, when abundance of other flowering plants can be had in beauty during the autumn and winter; but when these are all past a good batch of *Tydæas* fill what would otherwise be a break in the stove or intermediate structures, and are strikingly beautiful. To flower the majority of varieties profusely at the period indicated they must be started late and trained for the purpose, and even then frequently disappoint the cultivator. The majority are inclined to grow rather tall, and the flowers open successively as the stems lengthen. This is not the character of *Madame Heine*, which flowers naturally at the time named; in fact we have found it most useful, and have discarded all others in its favour. If well grown it does not exceed 18 inches in height by the time it has done flowering. It is very floriferous, the flowers being produced in clusters near the top of the plant. The flowers individually are delicate in colour, yet showy, and most beautifully spotted.

The variety *Madame Heine* is evergreen, and "drying" must not be attempted, for no underground stems are formed. Shoots suitable for cuttings are freely produced after the plants have flowered, which are taken off and inserted together in pans, and the old plants thrown away. Any light sandy soil will do for the cuttings, and if placed in the close propagating frame or in a Cucumber and Melon house every one will root. After they are rooted the plants are grown together in the pans until they have formed strong tops, which are inserted singly in small pots and rooted at the end of May or beginning of June, the plants in

the pans being conveyed to the rubbish heap. As soon as the cuttings are rooted and the plants have grown a little they are stopped, which induces the formation of from two to four shoots. When the small pots are full of roots the plants are placed into 5-inch pots, using a compost of fibry loam, leaf mould, and decayed manure one-third, and sand. After the plants are established in these pots they are again pinched, which results in the formation of bushy plants. These are grown during the summer in a heated pit shaded from strong sun, the atmosphere moderately moist, but they are never watered over the foliage. Moderately free ventilation is provided to induce a dwarf sturdy growth. During October the plants are given a drier position, generally being placed on a shelf close to the glass, where a night temperature of 60° can be maintained.

Under this treatment the plants would not attain more than 10 inches in height by the end of the year, and many of them are not more than 4 inches taller by the time they have done flowering. If well cared for and liberally treated the plants will retain their foliage down to the base. Large specimens if required can be readily obtained by inserting a number of cuttings together, but the plants recommended are the most serviceable for decoration.—LANCASTRIAN.

RAIN GAUGES.

ALLOW me to thank Mr. Symons for so kindly pointing out the inaccuracy likely to result from the adoption of the mode of fixing rain gauges shown in the little sketch you kindly published. I freely admit that the arrangement is a fanciful mode of my own, fixed, and the register kept, more for home and local use and interest than for accurate comparison with the outside world. Your readers are well aware that Mr. Symons is one of the first authorities on this subject, and I am very pleased that he has pointed out to them and myself how more reliable records may be made with as little trouble and at even less expense. If my little sketch, supplemented by the more authoritative information given by Mr. Symons, has been the means of interesting others on this subject, it was not written in vain.—R. INGLIS.

NOTES ON INDOOR PLANTS.

KENNEDYA MARRYATTÆ.—There is not a more beautiful flowering greenhouse climber, nor yet a more useful one, among the many handsome plants of the Pea family than this rare *Kennedya*. It is a free and healthy grower when planted in a peaty border and trained along a rafter in a cool house, and it flowers perpetually, at least it has done so with us during the past winter and the summer previous, and is still in flower. When I first knew this plant it was nursed in a small pot, and by dint of much kindness and coddling it was forced to remain a weakling and in every way an unsatisfactory plant. Liberal treatment proves it to be as robust and free as a Sweet Pea. Our plant runs up a rafter for about 10 feet and hangs down all the way along, its thin shoots bearing trifoliate hairy leaves and pendant axillary racemes of the richest scarlet Pea-shaped flowers. Botanists say the right name for this plant is *K. prostrata* var. *major*, and that it is a native of West Australia. Whatever the name the plant is a most desirable one, and notwithstanding the unpopularity of Australian plants generally this one is still to be procured from several London nurserymen. Western Australia suggests sand, much sunshine, and a dry atmosphere; and under cultivation these conditions prove most suitable for this *Kennedya*.

STARTING EPACRISSES.—Much harm is done to these plants after they have been cut down and rested for a short time by treating them as if they were stove plants during the month or so required to get the new shoots well away. A high temperature, shade, much syringing—in short, just the treatment we know to be right for a *Fuchsia* or a *Heliotrope*, is supposed to be equally good for these hardwooded plants. The result of this is all the old leaves or most of them are killed by the stewing process, which is supposed to help the new growths into quick activity. And so it does, but at what cost? Not only are the old leaves injured or destroyed, but these new growths run up like knitting needles, tall, thin, and weakly; their leaves generally fall off before the summer is over, as most forced leaves do, and altogether the last or autumn state of plants thus treated is worse than the first. Here is the right treatment for *Epacris* in a nutshell:—Cut down immediately after flowering, and cut deeply; put the plants in cool sunny quarters till the sun begins to have power, then use the syringe on all sunny mornings. When the new shoots are as big as peas repot the plants in sandy peat, and after keeping them close for a day or two after potting return again to the exposure treatment—*i.e.*, sun and air. This treatment will suit *Epacris* well.

DISBUDDING NEPENTHES.—Tall plants of *Nepenthes* may be induced to develop shoots at the base of the stem without its being necessary to cut away any of the pitcher-bearing foliage; in fact, without any sacrifice whatever except a little time. By pinching out the growing points of the shoots or stem, and cutting out the eyes at the base of each leaf with a sharp knife, the plant is reduced to con-

fining its efforts to grow to the few eyes left about the base of the stem. Before this plan occurred to me I used to sacrifice many good pitchers along with the portions of the stem which were cut away in the autumn, so that fresh growths should be pushed from below. The best pitchers and the greatest number are produced by these lowest lateral shoots. No doubt some *Nepenthes* growers will be glad of this hint; I was when first it occurred to me, and after seeing what it saved us in the way of pitchers. Another hint may be added. *Nepenthes* like liquid cow manure; plenty of it; no objection to a plunge overhead in it; on the contrary, they enjoy it. Of course it must be clear or it will soil the leaves. Perhaps the physiologists will think the fact worth noting. There is no doubt about its being a fact so far as regards *Nepenthes*.

ALLAMANDA GRANDIFLORA.—When grown on its own roots this plant is a failure, but if grafted on stocks of some of the stronger-growing kinds such as *A. Hendersoni*, it grows freely and flowers well. No particular skill is required to graft this plant so that it will take, and anyone who has worked a *Rose* or an *Epiphyllum* can also succeed with *Allamandas*. Some good results are often obtained by grafting weakly plants on to stocks of their stronger brethren, as note the effects of grafting on *Croweas*, *Boronias*, *Aralias*, and such, or, to take more notorious instances, the effects of it on our *Apples*, *Pears*, &c. When a plant will not strike root, or, if it does root, afterwards proves unhappy, look about for a near relation, another species of the same genus if possible, and try grafting. Reverting to the *Allamanda*, it may be said of this species that for small stoves it is superior in all points to its stronger and larger-growing relatives. We have seen it grown so as to form a graceful shrub about 3 feet high with numerous twiggy branches, every one of which bore a bunch of beautiful yellow blooms. As a trellis plant, and especially for balloon trellises, it is much superior to the other *Allamandas*, some of which look as happy thus grown as a *Hibiscus* or an *Ixora* would if treated as trellis plants.—W. N.

INSECTIVOROUS PLANTS.

THE DROSERACEÆ OR SUNDEW FAMILY.

THERE are over a hundred species of *Drosera*, three or four of *Byblis*, two of *Roridula*, and one each of *Drosophyllum*, *Dionæa*, and *Aldrovanda*. They are widely distributed over the temperate zones. Many of these are extremely handsome, and all are very interesting. *Dionæa Muscipula* or Venus' Fly-trap, a native of the eastern part of North Carolina, and is found nowhere else, it has been known in this country since 1765; for in that year Ellis, a well-known English naturalist, sent a drawing of it to Linnæus, who bestowed on it the poetical name of *Dionæa*. The account which Ellis gave of it moved the great Swedish naturalist to declare that, though he had seen and examined no small number of plants, he had never met with so wonderful a phenomenon. Ellis shortly afterwards obtained living plants from America, which he grew and flowered in his own rooms. He also noted, or rather suspected, the insectivorous propensities of this plant. A leaf of *Dionæa* is somewhat like that well-known instrument a rat-trap; it is, however, a much more refined piece of mechanism. It consists of a blade or leafstalk and a two-lobed leaf; in the interior there are three sensitive filaments on each lobe. When any of these are touched, however lightly, the two lobes immediately close together, and the marginal spines interlock through. At first they do not close tight, but leave a small opening. This puzzled Mr. Darwin very much. He afterwards found that the object the plant has in view is simply to allow of the escape of small insects that could be of little use, retaining only those that would be of some service. When a moderate-sized fly is enclosed, in its struggles to escape it irritates still more the sensitive hairs, which ultimately causes the lobes of the leaf to press tighter. Then, and not till then, a true digestive fluid is poured out from numerous glands with which the leaf is studded, and the product is absorbed through the lobes of the leaf. *Dionæa* is able to digest very much the same substances in exactly the same way that the human stomach does. The time taken to digest a fly varies according to the vigour of the plant; about eight days is the usual time taken by a healthy plant to consume a respectable fly. The marginal spines then become erect, and the leaf ultimately expands, ready for another meal. If we try to deceive it by putting in some substance from which it cannot derive any nourishment, such as small bits of wood or glass, the leaf closes, as it does by the mechanical irritation of touching, but in less than twenty-four hours will be found open and the indigestible substances thrown out.

THE LENTIBULARIACEÆ OR BUTTERWORT FAMILY.

This contains *Pinguicula* or Butterwort and *Utricularia* or Bladderwort. *Pinguicula* captures insects by the upper surface of its leaves. These are set with glandular hairs, which secrete a viscid fluid. Like *Drosera*, this plant digests and absorbs nitrogenous matter. *Utricularia* captures insects by small bladders attached to the root-like processes. These bladders possess a most ingenious trap-door mechanism, which only open inwards, so that when a cyclops or other animalcule is once in it must remain there. It is supposed that the remains of these creatures are absorbed by the plant, but not digested.

CULTIVATION.

The cultivation of these plants is by no means difficult. They require pretty much the same description of soil, moisture, and general treatment. *Nepenthes* alone require much heat; an average temperature of 70° suits them very well. The soil should consist of fibrous peat with the earthy matter shaken out. To this should be added from a third to a half of chopped sphagnum, and a sprinkling of charcoal, potsherds, and silver sand

thoroughly well mixed. This will form a free open compost. Owing to the large amount of water required, good drainage must also be given. In repotting *Nepenthes*, very small pots or baskets should be used in comparison with the size of the plants, and great care taken not to injure the delicate roots. It is better not to shake the old soil out, unless it has become soured and unwholesome. In that case, the soil should be washed away, thus preserving the roots. The best time for this operation is about the middle of February. They should be placed near the glass, and not shaded too heavily, unless in very bright sunshine. To have abundance of pitchers produced they should be kept constantly cut back, as when growing too freely they usually fail to produce pitchers; and this is what might be expected, bearing in mind what has been stated regarding their habits. So long as the plant is drawing plenty of nourishment from its roots it has less need to develop pitchers, but when cramped and root-bound they develop freely. Some years ago, on going through our stoves with Mr. Stuart Low, who had just come home from Borneo, where he had discovered some interesting species of Pitcher Plants, and showing him a very fine plant of *Nepenthes Rafflesiana*, and asking him what they were like at home, he said, "You never see them bearing pitchers like those, but simply one here and there, and mostly near the ground. But after a fire has taken place, and the forest burnt down, the *Nepenthes* spring up just covered with pitchers." So that in our case the pruning knife gives equal results with the forest fire in the home of the *Nepenthes*. I prefer, on the whole, seeing Pitcher Plants grown in baskets, as the pitchers show in them to better advantage. A good many hybrids have been raised in this country and in America—the best by far, indeed I may almost say the best Pitcher Plant in cultivation, is *Nepenthes Mastersiana*, raised at Chelsea in the Messrs. Veitch's nursery. It is a hybrid between *N. sanguinea* and *N. distillatoria*. I have succeeded in raising a large batch of hybrid *Nepenthes*, the result of a cross between *N. Rafflesiana* and *N. Chelsoni*. They, at all events, are most interesting plants in the seedling stage. The first leaves produced, after the cotyledons or seed leaves, are perfect little pitchers, and every leaf since produced has developed a pitcher, which they are likely to continue forming so long as they are in the young condition. With a few exceptions *Nepenthes* are readily propagated from cuttings, the simplest way being to insert the cutting through the bottom of an inverted flower pot, without any soil, placing it in a heated case, in fact rooting the cutting in moist air, and afterwards potting off in the usual way.

*Sarracenia*s require much the same soil as *Nepenthes*, but in repotting nearly all the old soil should be shaken out and almost no heat but that of the sun given. An ordinary greenhouse is the best place to grow them. They should be firmly potted, slightly raised in the centre, and the surface covered with live sphagnum. They also require abundance of moisture; to ensure which, the pots should stand on sphagnum, which retains the moisture. This is better than placing them in flats of water, as in this way the soil is apt to sour, thus causing decay at the roots. All the species are increased by division and from seed. The various species of *Drosera*, including *Dionæa* and *Drosophyllum*, require the same treatment in every respect as that stated for *Sarracenia*, the only exception being that the soil should be made a little less rough. With this difference, they may be very well grown together and treated alike. *Droseras* are easily raised in quantity from seed, and in some strong-rooting kinds, such as *Drosera dichotoma*, by root cuttings. If the roots are cut up into the smallest pieces and strewn over the surface of a seed pan, covered lightly with sandy soil and introduced into heat in February, then, keeping them close for a few weeks, each little piece of root will grow. Almost any quantity of this elegant species may be thus had in a single season.

Notwithstanding all their dangerous enticements to insect life generally, insectivorous plants are as liable as others to be preyed upon by the ordinary plant pests. Green fly attack the young leaves of some, causing them to become deformed; on others thrip and scale do much damage if allowed to get a hold. These must be kept in check by the usual means for destroying such pests.—ROBERT LINDSAY, *Curator Royal Botanic Gardens, Edinburgh* (in *Forestry*).

CHURCH DECORATIONS AT EASTER.—One of the most tasteful examples of church decoration that I have seen for some time I observed last Sunday near the metropolis. Primroses and Daffodils were most liberally employed in the body of the church around the pillars and the windows, while the font was adorned with white and cream-coloured Roses. The effect was most pleasing.—A. B.



HARDY FRUIT GARDEN.

So much has the persistent cold weather checked the swelling fruit buds that we may now indulge a feeling of hope that the blossom, when it does open, will sustain no harm, and that we shall once more have an abundant crop of fruit. Cold dry wind blowing steadily from the north and north-east during March and April may retard the blossom so much as to save the crop, but it is a severe trial for newly planted trees, through which they will pass unscathed if the planting was thorough in every detail. If not, the risk of failure is about proportionate to the degree of negligence in the work. Planted in fertile soil with the roots spread carefully out to full length, the soil pressed firmly upon them, a mulching of litter, or, better still, half-decayed stable manure, put upon the soil, fastened securely in position so that it cannot be loosened in the soil by wind, and its shoots shortened at the time of planting, no harm can happen to a healthy tree from drought or cold wind; and when it does

start into growth, that growth will be strong, free, and worthy of our best care, for every shoot will form the basis of a branch or spur. Wasteful fruit-growers are they who still persist in leaving a newly planted tree unpruned until, as they say, it has had a year to become established in the soil—wasteful both of time and of the health and vigour of the tree; nor does a tree left unpruned the first season make a root growth at all equal to that of the pruned tree. The natural action of a tree is balanced to a degree of nicety which art cannot approach. By pruning a newly planted tree we confine its growth in the first season to a few sturdy vigorous shoots clothed with large stout foliage, and we know that the root-action is equally vigorous and active—ininitely superior to that of the unpruned tree, which may make a little growth or none at all. When we plant a fruit tree in its permanent position we must have no wasteful growth; every shoot, leading or lateral, left upon the tree must be left with a motive clear and unmistakeable, and a master of fruit culture would be able to give a satisfactory reason for the removal or retention of every one of them.

Till growth is once more in full activity there is very little to be done in the fruit garden, excepting the doing what is possible to screen blossom from late frost and cold cutting wind. Keep all screens and coverings away from the trees till blossom is fully expanded, and then if there is risk of damage from ungenial weather by all means do what is possible in the way of temporary shelter. Take especial care that wind and frost screens are made fast, so that no loose mat can batter the blossom which it is intended to protect.

Raspberry Culture.—Upon making inquiry about the cause of several failures which have recently come under our notice, we have more than once been told that the soil was unsuitable for Raspberry culture—just that and nothing more. Shall we confess that such answers give rise to something akin to a feeling of chagrin? We might well do so, for repeatedly has it been explained in the *Journal* in plain and unmistakeable words, how easily Raspberries may be managed successfully in the poorest soils. So far as the gardeners of this country are concerned, it is not a question of climate but of soil. Thorough drainage, equally thorough mechanical division of the soil—and we require nothing better for this purpose than coal ashes—and a compost of equal parts of the garden soil and old decayed manure, at least 18 inches deep, weekly dressings of sewage or other liquid manure throughout the season of growth, annual heavy surface dressings of old farmyard, stable, or pig manure in autumn, and there need be no more failures in Raspberry culture. For the encouragement of those who may be disheartened by failure, we tell them again that it was owing to a failure in our own practice many years ago that we resolved to succeed, and a little consideration soon showed us that to keep Raspberries in a condition of semi-starvation was to court failure. Even now it is not too late to plant a new bed and by high feeding to obtain half a crop of fruit from it this year. Shorten the canes to 18 inches, plant them a foot apart in rows 5 feet apart, let the use of sewage be regular and thorough, and there will be some good fruit yet, and, what is more important, plenty of stout canes for a full crop next year.

FRUIT FORCING.

VINES.—*Early Houses.*—Examine the Grapes closely, and if any of the berries are likely to be crowded remove some of the least promising, so that the others may attain their full size, but do not remove so many that the bunches will be loose. Examine the inside borders, and give a thorough supply of water if necessary, so as to keep the soil in a moist healthy state until after the Grapes are cut. The best time to give the final watering before ripening is on a bright morning, as all superfluous moisture will have been dissipated before the house is closed for the day, and to prevent the escape of moisture from the soil as well as to encourage and keep the roots near the surface spread a little fresh mulching or short stable manure over the border. The ammonia arising from the manure, in combination with the stimulating influence of the liquid applied to the roots, will keep red spider in check, but if it appear coat the pipes with a thin wash of sulphur and skim milk. If there are Frontignan or Muscats in the house it is not safe to use the sulphur, as their delicate skins are liable to be injured, and in that case it will be advisable to sponge the leaves affected with the spider carefully with an insecticide at a safe strength, which, although a tedious operation, is safe and efficacious. Admit air night and day when the berries begin colouring, and increase it as they approach ripeness, when the temperature may be reduced; but artificial heat must not be dispensed with, as the Grapes though considered ripe enough to cut will improve in quality, the last cut from the early house being very often the best. Enough fire heat will be needed to prevent the temperature falling below 60°.

Succession Houses.—Give timely attention to stopping, tying, and regulating the growths, also to thinning, which under no circumstances must be allowed to get into arrears, as every increase of berry prior to thinning only means so much size taken from those retained to finish. Allow a free extension of laterals where there is room, otherwise keep them closely pinched to prevent crowding. Maintain a good moist heat in houses with Vines swelling off their crops, ventilating early, and close early in the afternoon, well damping available surfaces at the same time, and sprinkle the floors with liquid manure before night. A night temperature of 60° to 65° will be suitable, 70° to 75° by day, and 10° more from sun heat with a free circulation of air. Afford liquid manure to inside borders copiously when moisture is needed, and always in a tepid state.

Houses containing Muscats and other shy-setting varieties in bloom will require a high temperature by day, with a good circulation of air and a fair amount of atmospheric moisture, the latter being essential to prevent the foliage, as yet young and tender, suffering under bright sunshine.

To reduce the strain on the Vines allow them to rest at night, for however easy it is to maintain a night temperature of 70°, a few degrees less with a little air will be more beneficial, especially when the roots are active. Carefully fertilise every bunch, and if there be a deficiency of pollen employ that of Hamburgs.

Late Houses.—Take advantage of sun heat to push on Vines of Lady Downe's and other winter varieties, as these cannot be over-ripened if they are to keep in good condition for some months after they are removed from the Vines. Admit air early on fine mornings, it is the only way to escape scorched foliage and secure thick leathery foliage. Allow the temperature to rise to 80° with plenty of moisture, and close in time for it to rise to 90° from sun heat on fine afternoons. Until the Grapes flower a night temperature of 60° is sufficient, then raise it 5° in order to increase the length of the bunches and facilitate the setting of the fruit. Late Grapes succeed best when planted inside the house with the roots passing into outside borders. These should be elevated so that water will drain from them, and mulch them well, taking care to insure abundance of moisture by exposure to all the rain that falls from the time the Grapes are cut in January until the succeeding crop is ripe in the September following. If dry weather prevails during the summer artificial watering must be resorted to, and if well drained the natural rainfall should be supplemented by a good soaking after the Grapes are thinned, and again before they take the last swelling for ripening. These waterings will not of course be necessary if the rainfall is unusually heavy about those periods, and if the Vines need a stimulant give liquid manure. It is imperative that late Grapes be artificially impregnated, and for this purpose a camel's-hair brush is the best, as drawing it across the stigmas completely removes the glutinous substance, which if left undisturbed prevents the berries setting.

Late Hamburgs.—Growth is now commencing, and where there is likely to be any irregularity from the Vines being young, depress the canes below the horizontal line of the base, and keep them in that position until the lower buds have started and the shoots are a couple of inches long, when the Vines may be secured in position. The inside borders will need thorough soakings with tepid water or liquid manure as a stimulant or otherwise may be required, repeating it if necessary, as it is essential the borders be thoroughly moist. Artificial heat will only be necessary to prevent the temperature falling below 50° at night, and during the day an advance above 65° must not be allowed without a free circulation of air. Close for the day at 65°, and gently syringing the Vines and house in the afternoon will afford sufficient moisture for the present. A close moist atmosphere has a tendency to make the growth long-jointed and the foliage flabby, which should be guarded against by early and free ventilation, depending on sun heat at a more advanced stage for accelerating the growth of the Vines and swelling the crop.

PLANT HOUSES.

Epacrises.—All plants that have flowered may be cut close back, so that they may be started into growth without delay. If any plants have become bare at the base they may be subjected to hard pruning, and in a short time they will commence growth and make useful flowering plants for another year. After pruning place the plants in a structure where they can be kept warm, and the night temperature about 50°. Syringe these plants twice daily during fine weather, and close the house in which they are placed early in the afternoon. When the growths are about 2 inches long the plants will be ready for repotting if they require it, and must have more air to harden them before they are placed in a cold frame. The earliest plants are in active growth and ready for potting. Small shifts only should be given, and the roots must be injured as little as possible; in fact, the old roots must not be disturbed more than removing the drainage from the base. The pots must be carefully drained, and the soil pressed firmly round the roots. Keep the plants close for at least a fortnight after potting, and syringe them freely to avoid watering at their roots for as long a period as possible after potting. For some time after this operation very careful watering is needed, or they will fail to root freely into the new soil. A little shade for two or three weeks after potting during bright sunshine may be given. Good fibry peat and coarse sand form the most suitable compost.

Heaths.—*Erica hyemalis*, *E. autumnalis*, and others that flowered early in the autumn, if well treated since will have started freely into growth, and should be transferred at once into larger pots if they need this attention. Give small shifts only, pot firmly, and use the same soil as advised for *Epacrises*. After potting place the plants in cold frames, keeping them somewhat close until they have commenced rooting afresh. *E. autumnalis*, however, much dislikes anything approaching a confined atmosphere, and if subjected to it soon becomes a prey to mildew. After the plants have commenced rooting freely ventilation should be given liberally to insure a firm sturdy growth. The leading shoots, if they show any signs of being crowded, must be thinned, for it is better to have six, eight, or more, according to the size of the plants, strong and profusely flowered, than double the number in a weak state. Young stock in 2 or 3-inch pots must be placed in 5 and 6-inch pots, and afterwards stood in cold frames and treated the same as cut-back plants. *E. melanthera*, that has just flowered, will bear the same treatment as *Epacrises* after being cut back until they have fairly started into growth. *E. Willmoreana* should be cut back at once and started into growth by being kept close until they are starting. Unless the growth is advanced moderately early in the season it is impossible to ripen the wood sufficiently for flowering well, especially in the northern parts of the country.

Hardwooded Heaths.—Plants that need repotting must be attended

to at once before the sun has too much power, and the necessary tying and training may be brought to a close as early as possible. Any plants that are newly potted must be shaded from the sun, or the moisture will be evaporated from the soil too rapidly, and prove very trying to the plants. During bright sunshine and drying winds the house in which they are growing must be kept close and shaded in preference to admitting air. The plants can be placed on dry stages, but upon some moisture-holding material. Abundance of air may be given to the general stock whenever favourable, and those required for late flowering cannot well be kept too cool; they must also be shaded from the sun, or they will be brought on too rapidly.

Cytisus—After flowering these plants may be cut back and placed in a cold house until they break again into growth. Young plants in 3-inch pots, required for purposes of decoration in 5 and 6-inch pots another year, may be potted in those sizes at once and placed in cold frames. Syringe the plants once or twice daily, and keep the frame close until they are rooting and growing freely, when abundance of air must be given, and the plants grown as cool as possible. These are very useful plants for decorative purposes in small pots, because they can be grown to a flowering size quickly. A batch of cuttings should be rooted annually for this purpose either in the autumn or spring. Cuttings will root freely now if inserted in sandy soil and covered with a bellglass, and afterwards stood in an intermediate house where they can be shaded from the sun. These plants grow freely in a compost of good fibry loam, one-seventh of decayed manure, and sufficient sand to keep the soil open.



SEASONABLE NOTES ON BEES.

WITH the month of April the bee-master's work commences in earnest. Those who took our advice, and, excepting in cases of necessity, left their bees as quiet and undisturbed as possible during the treacherous month of March, did well. It has as usual been a trying time for the bees, more especially for those in which an undue and unnatural excitement had been from any cause brought about. Bright sunshine accompanied by chilling north and east winds has thinned the ranks much more than a long spell of frosty and dull weather would have done.

One correspondent to this Journal asked some time back how "P. H. P." could prevent the presence of quantities of brood in his hives from Christmas onwards. We cannot, nor would we try to stop the natural augmentation of our stocks in the late winter and early spring months. What we spoke against in a former letter was the abnormal condition of many stocks in March, brought about by injudicious stimulation, and entirely by artificial means. Our advice has been to assist Nature, not to set up an absolutely unnatural condition. Like all other good things, the system of stimulative feeding may be abused instead of being carefully used. We have always written against what to us seems the folly of raising stocks to swarming power in March, long before there is sufficient natural income to support them, and weeks before they can be of profit to their owners. It is only in very few much-favoured localities that there is any great flow of honey before June. May supers from fruit blossoms are of course obtainable in the midst of the great fruit-growing districts of Kent and Herefordshire, but over the greater part of the United Kingdom the fruit blossom honey is only sufficient to give the bees the means of existence. This is a fact, unless in the hands of skilful bee keepers the bees are so managed in moveable-comb hives that, by giving them stores of artificial food, by spreading the brood, by contracting the body of the hive, the bees are crowded into the super just as the fruit blossoms open. But we never yet saw a cottager with the ordinary skep get supers in April.

However, the time has now come when every bee-keeper who wishes to get the most out of his bees should carefully, systematically, and regularly feed them—carefully, so as not to bring about the destruction of his hives, for food given carelessly would tend to that effect. Food should be given in the evening and taken off in the morning if the day be fine. It should be so given that bees from other than the fed hive cannot get at the food. The name of "feeders" is legion, and the poor man with a few bar-frame or other

hives has to think twice before he gives 1s. 6d., the usual price of any simple, effective "feeder." He can easily extemporise one for himself. The way to do so has been so often explained in this Journal that it is better to leave each bee-keeper to follow his own inclinations. So long as the feeder be easily manipulated, that it be so arranged as to give the bee-keeper control over the amount of food liberated, and that it be placed as near to the cluster of bees as possible, the material conditions are fulfilled. Means must be taken to prevent the spilling of syrup about the outside of the hive. Once robbing is brought about it is most difficult to cure, and its effects are invariably, if not checked, the destruction of the weaker stocks, and perhaps of the stronger stocks also. We recently had the very useful account of Mr. Abbey's experience of the effects of robbing. It is better to give the syrup warm, and to wrap up the feeder so as to keep it warm as long as possible.

Bees must be fed systematically, a proper account kept as to the quantity given to each hive, and the hives fed in rotation, otherwise mistakes will be made; and, of course, regularity in feeding is all-essential. The object to be kept in view is that of deceiving the bees into taking the food as a constant natural supply. When this is the case the queen will be impelled to expand her operations of egg-laying accordingly, and in time the hive may be made to be one great brood nest from end to end. As the feeding proceeds, so the gradual expansion of the brood chamber must be carefully managed by the bee-master. The dividers must be drawn back and sheets of foundation—or, what is better, clean combs—given to the bees as they require more room, only keeping these supplied when the expansion is absolutely necessary. The more the bees can be crammed into a fewer number of frames the more will their numbers be augmented. Spreading the brood should be undertaken with the greatest caution, otherwise much mischief may be caused. Hot fine weather is the greatest help to success when the brood is at all spread out; but when this experiment is carried out by a clever and careful manager great results may be brought about in a very short time.

It is useless to keep weak stocks for this season's profit. The weakest of stocks may, of course, be built up into powerful and valuable colonies for the next year; but it is better to unite them, as well as queenless hives, to stronger ones. If they have queens they are better fed gently, and united late in the month; if without queens they will soon dwindle away unless utilised at once.

Where there is a lack of natural pollen pea flower should be given sprinkled on clean shavings. In order to attract bees at once to this it is only necessary to give an old skep a good baking before a fire, then put in the shavings and flour and place it in a sunny sheltered situation. We find that a skep so furnished and placed in a garden frame near the bees is a favourite resort.—P. H. P.

THE HONEY COMPANY.

YOUR readers will see in your advertising columns an announcement of the first general meeting of the shareholders of the above Company. The best answer to the candid criticisms of the Lanarkshire and Hallamshire Bee-keepers, and Messrs. Hewitt, Thomson, and others, is shown by the fact that over 5300 shares have been subscribed for, and that there are some 250 shareholders, and that every week brings in applications for some 150 more shares.

Some of your correspondents seem to think that the formation of this Company will depreciate the value of honey, and that it would be better to keep up an artificial price by a gigantic trades union of all bee-keepers, and that we should go out on strike if the public will not give us a shilling or eighteenpence per pound for honey, no matter whether the honey harvest is good or bad. It is a well-known fact in political economy that the amount of wages lost by strikes is infinitely greater than the increase of wages in those cases where the strikes have been successful.

But leaving the so-called dismal science—and never was a more misleading phrase coined—it may be taken for granted that an ounce of fact is worth tons of theories.

Only a short time ago I received a letter from a large bee-keeper whose crop this year was over a ton in comb and run honey, offering to supply me with honey at 6½d. per lb.; and having tasted some hundreds of

samples and frequently acted as judge in the honey classes at South Kensington and many other shows, I had a very high opinion of the samples sent, and the honey was quite up to exhibition standard.

This bee-keeper could not dispose of his surplus honey; he had sold some £25 worth, but had not received the money, though the sale took place some months ago. It is not the intention of the Company to interfere in the slightest degree with the retail sale of honey. If a bee-keeper, by means of the local grocer, honey fairs, or even the N.B.K.U., can get a farthing per lb. more for his honey than by selling it to the Company I can speak for myself and I am certain also for the rest of our board, that our wish is that he should get the most he can for it; and it would be most unbusiness-like on his part if he did otherwise.

Still, on the other hand, he may have overstocked his market, or his neighbours may have done so; the Company then steps in and offers to take his surplus, be it 20 lbs. or 20 tons, at a price which he need not accept unless of his own sweet will. There is no compulsion in the matter, and some of your correspondents seem to have been under the misapprehension that there is, or might be.

Of course, in these days of co-operative stores and universal providers, there is a great outcry against the middlemen, and you hear constantly that they are doomed. Still, I can speak from experience that it has not been a success in the foreign trade, this trying to do away with the middlemen or merchants.

The result of competition, however, has benefited the public, as the profits have been cut down to a low figure, and we do not hear so often of colossal fortunes being made in trade.

So, when one of your correspondents talks of 3d. or 4d. per lb. being necessary to pay the expenses of the Company he exaggerates, or is ignorant of what relation these amounts bear to the capital. A very small profit per lb. will pay all expenses and return a handsome dividend on the capital; the profit he talks about would return some 70 or 80 per cent., or even more than this if our capital were quickly turned over. In conclusion, it is useless to persuade anyone against his will, the true touchstone will be seen in the success or failure of the undertaking, and, with your permission, I shall be very pleased to write to your paper this time next year, and lay before your readers the result of our year's experience as a company, the state of British bee-keeping, which, as a doctor, I may hope will have passed the crisis of its Honey Company disease (?), and will be more flourishing than in the ancient days.—GEORGE WALKER, *Wimbledon*.

ZINC FLOORS FOR HIVES.

WOULD "A Lanarkshire Bee-keeper" kindly say what sized zinc he uses for the floorboards of his hives? I shall be glad if he will give the size of the holes, as I am not acquainted with the material by number, and I wish to order it and get the right size. Also will he say if 6 inches, 8 inches, or 10 inches square in the centre of the floor will be sufficient for ventilating purposes?—F. J.

[Zinc for floors should be as wide in the perforations as to allow as large pieces as possible of *débris* to fall through, but not so large as to allow the bees to thrust their heads through and be caught like herrings in a net. The size I use has in the line of holes five holes to the inch, and across the lines six. That size answers the purpose very well, and a supply of it should always be at hand. For ventilating purposes 6 inches, 8 inches, or 10 inches square would do fairly well, but the great object is to have every part beneath the combs perforated so that there will be no accumulation of *débris* on the floor, and to prevent all dampness, which is more or less present on every wooden floor at certain seasons, and is destructive to both bees and comb. A full zinc floor prevents all this. I have several nuclei of not more than a thousand bees which have wintered well on zinc floors, and the number of frames, large size, ten. I notify this to show there is no danger in its use.—A LANARKSHIRE BEE-KEEPER]

TRADE CATALOGUES RECEIVED.

Henry J. Jones, Hope Nursery, Loampit Vale, Lewisham, S.E.—*List of New and Good Plants and Seeds.*

Schlegel & Fottler, Boston, Mass., U.S., America.—*Catalogue of Seeds for 1885.*

Rawlings Brothers, Old Church, Romford, Essex.—*Catalogue of Dahlias.*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

still, what are we to do with the sheep? Such has been the plaint of many an anxious farmer at Lady-day this year; and while we are able to fully appreciate the difficulties of the position we are unable to offer them one grain of sympathy, for the simple reason that in the majority of such cases there could have been an ample provision of green food but for the slovenly careless system, or rather want of system, in cropping of so many of them. Farmers, more than any other class, are wont to follow a beaten track, to cling to old customs, and in cropping at any rate to do as their forefathers did. Yet this very habit of looking back should remind us how frequently our fickle climate inflicts upon us cold late springs. Knowing this stern fact so well, as we all must do, ought we not to do all we can to make provision against an evil of such frequent recurrence? That it is possible to do so has been shown repeatedly in this Journal, and upon the sound principle that the best time to realise the full value of a remedy is during the existence of the disease, special attention is now given to this matter. Timely attention was called last season to the value of Rye for affording an early supply of green food for folding, as well as for cattle and horses. Our own crop of it, sown early last autumn, as was recommended, was available for use early in March, but it was not required till the end of that month, and then it was fully a foot in height. Winter Oats was another still more important crop to which we called attention again and again, and not in vain, for we had the pleasure recently of seeing some forty acres of winter Oats which a gentleman had had sown last autumn, and which were available for his breeding flock, while not an acre of them could be found upon his neighbours' farms. Cordially could we appreciate the intelligence and good sense which had thus applied theory to practice, and ensured an ample supply of green food to fall back upon and a crop of Oats ripe for harvest in July, so that it can be cleared off the land before the other corn is ripe.

Italian Rye Grass must have special mention now, as this is the time to sow it with a corn crop for a supply of early fodder next spring. In ordering seed care should be taken to obtain this, the *Lolium italicum*, and not *Lolium perenne*, to which general preference is given. Why, we cannot say, for the fact is established beyond dispute that *Lolium italicum* yields much the heaviest crop per acre. Our special object in sowing it is to ensure a green crop for the sheep, which shall be quite ready for use before the Rye is all eaten. To have one crop overlap the other is all-important, as it is clear that we must not venture upon too close a degree of precision in our calculations, but rather allow a margin of a week or two or more for the effects of unkind seasons.

Successional crops of spring Tares are now being sown onwards through May for folding, and they answer admirably for all kinds of sheep, but are of especial value for bringing on lambs for the early fairs, affording a prompt return and fair interest upon our outlay. One sowing of winter Oats in October, followed by several sowings of spring Tares, is certainly an important part of arable sheep farming. Dry food is given in the folds at the rate of about a pound per head daily; but when the Tares are old enough to be sound food the bowels are not liable to be relaxed overmuch, and dry food is unnecessary. This is precisely one of those matters requiring watchfulness and judgment, the condition and progress of the lambs being our best guide; and the time when we wish to have them ready for sale has also to be taken into consideration.

Cattle Cabbages have been used with profit and safety among the sheep ever since last autumn, and Thousand-headed Kale now affords an invaluable supply of sound wholesome food upon which sheep thrive. Under good cultivation both the Drumhead Cabbages and the Kale give a crop of exceptionally heavy bulk per acre, and when used with due caution the sheep do not suffer from scour. Rock salt should be always accessible, and a moderate quantity of dry

food given regularly in autumn, winter, and spring, consisting of chopped straw and hay, with a little bran and crushed oats, carefully mixed. Sheep do not take dry food well if it is only given to them occasionally; once accustomed to it, however, there is no further trouble. It answers best, therefore, to give them some daily, however small the quantity may be. Sowings for autumn and winter feeding should be made now of Drumhead Cabbages and Thousand-headed Kale, and again in July for spring and summer use. If land can be spared drilling in the seed is preferable, all the labour of transplanting being avoided, and the plants receive no check; but in most cases a fine seed bed is prepared, due care being taken to render it rich and mellow, so that the plants may be easily drawn from it without any serious breaking of the roots. It answers best to sow thinly in rows wide enough apart to admit a hoe, and then the plants are not liable to become drawn and weakly, and a pound of seed is sufficient for an acre.

WORK ON THE HOME FARM.

Horse and Hand Labour.—Wheat-hoeing has been kept to as closely as possible, for notwithstanding the cold dry weather the plant is so strong that vigorous growth will quickly follow a change to warmer weather with showers. In a survey of the condition of Wheat due allowance must be made for the habit of growth in different sorts. For example, Golden Drop has a flat spreading habit in its young state, so that its true condition can only be seen by very minute inspection; while Square-head Red Wheat, Imperial and Champion White Wheat, all have an erect free growth that is infinitely more attractive, yet the plant may not be at all superior to the Golden Drop. Poles are now being put to the Hops, and when this is finished the horse hoe will be run through the surface between the poles to get rid of early weeds, and it will be in frequent use for the same purpose throughout summer. Hop-tying will begin as soon as the young growth is about 2 feet in length, soft pliant rushes being used by women for the purpose. Rolling and harrowing grass and corn has been done, and as soon as the sowing of root crops is finished the whole of the horses will be put upon any foul land uncropped to get it clean and in order for sowing either with Mustard or Grass seeds, for which latter purpose the culture must be thorough, in order to reduce the soil to as fine a condition as possible.

Dairy Cows.—Examine the whole of the cows and calves carefully, and consider well the treatment of the herd, deciding now upon any withdrawals to be made this year. Barren or worn-out cows should soon be taken from the herd and given a summer run upon good grass, so as to be ready for the butcher in September. Delicate cows, unless of especial value for quantity or quality of milk, require so much extra care and food that they should be got rid of. Mark good or bad qualities in heifers as they calve, and subsequently, so as to be able to select animals of promise to add to the herd. The true value of a cow is not realised fully till after the second calving, but heifers afford tolerably clear indications as to their subsequent value. Calves may be put into three classes—for cows, for store beasts, and for fattening at once for veal. In the first class we only retain the progeny of really useful cows, and which have been crossed with as good a bull as could be had; in the second, large-boned animals with strong vigorous frames are entered if the cows are quite sound and healthy; in the last class all doubtful calves are placed, and they are fattened and sold as soon as possible. No matter how big a calf a weakly cow has, it is not kept but is fattened at once. This, of course, does not apply to Channel Island cattle, or rather Jerseys, for their calves are never very large or vigorous.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain	
	Barometer at 32 nd and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass		
1885.											
March—April.											
Sunday	29	30.083	44.0	39.1	S.	40.0	51.4	34.2	88.8	28.8	—
Monday	30	30.168	46.3	41.7	N.E.	40.6	51.6	37.3	89.7	33.8	—
Tuesday	31	30.334	44.1	37.6	N.E.	40.8	56.7	31.5	89.8	22.7	—
Wednesday ..	1	29.879	48.2	43.3	S.W.	41.2	60.8	36.8	104.4	28.2	0.024
Thursday ..	2	30.001	41.9	37.1	N.	42.8	52.6	37.2	99.1	35.3	—
Friday	3	30.244	42.3	37.6	N.E.	42.6	53.0	30.6	96.0	25.6	—
Saturday	4	30.036	42.3	33.0	E.	42.1	52.0	29.3	94.2	22.3	—
		30.106	44.2	39.2			54.0	33.8	94.6	28.1	0.024

REMARKS.

29th.—Fine throughout.

30th.—Fine and bright.

31st.—Fine and bright, but cold wind.

1st.—Fine and pleasant, warmer; a little rain in evening.

2nd.—Fine bright day; lunar halo at night.

3rd.—Bright and cold; white frost early.

4th.—Thick white frost early, fine, with cold east wind.

A dry week, with frequent frosts and large daily range of temperature, averaging and reaching 25.2° on 31st.—G. J. SIMONS.



COMING EVENTS

16	TH	Royal Society at 4.30 P.M. Linnean Society at 8 P.M.
17	F	
18	S	
19	SUN	2ND SUNDAY AFTER EASTER.
20	M	
21	TU	National Auricula Society's Southern Show, South Kensington.
22	W	

ON WATERING PLANTS.

EVERY gardener knows that plants are incapable of taking up food from the soil unless it be presented to them in a liquid state, and that no matter how rich in suitable foods the soil may be, so long as it is kept dry the plants are unable to partake of them. On the other hand, water in excess of what the plant requires is often as prejudicial to growth and health as the other extreme. To know how much water will be good for a given plant we must first learn something of its nature or of the conditions under which it grows naturally, for the great points to determine are the amount which is most congenial to a given species under given circumstances and the periods of growth when water should be applied or withheld. Taking Nature as a guide first of all, we find many plants thrive under often very diverse conditions as regards soil and moisture, as, for instance, among the plants which are native of our own country the conditions under which the same species is found growing are often extremely varied. This is sometimes to be accounted for by the mutable nature of the species, which enables it to adapt itself to a variety of conditions; but generally there is one set of conditions which are most suited to the welfare of a plant when wild, and if we could be certain that we know what these conditions were we might safely follow Nature as a guide in the cultivation of such plants. For hardy plants there is, as a rule, less difficulty in affording the conditions supplied to them by Nature; but for plants cultivated in pots under glass this is not so easy, and sometimes it is quite impossible. We will, therefore, consider here the question of watering in its relation to the management of plants in pots, as harm is more frequently done by careless watering for them than it is possible to do to plants growing in the open ground, which are less dependent on the watering pot for their food.

To treat this subject in such a manner as the extremely varied nature and requirements of the hosts of indoor plants would necessitate, dealing with each group separately, would require a much longer paper than is intended. We can only deal with it in a general way by pointing out the most important points to be considered. Bearing in mind that all the materials (except a very small fraction obtained by means of the leaves from the atmosphere) out of which a plant builds up itself are conveyed into it by means of the fluids absorbed by the roots, which fluids must be supplied as water, and that in addition to what is so used there is also a very large amount of water given off through transpiration, it must be apparent that the quicker the growth of the plant and the larger the leaf area the greater must be the supply of water at the roots. Plants which grow slowly and which have not a large leaf area will, on the other hand, require less frequent supplies. In a moist atmosphere such as a stove there is much less transpiration (perspiration) from the foliage of plants than in an exposed well-aired house. All large-leaved thick-rooted plants require an abundance of water when

growing: plants with small leaves and fine roots, such as Heaths, Leschenaultias, &c., being satisfied with much less. Palms, Crotons, Dracenas, Begonias, Agaves, Cycads, and many others require to be kept constantly moist whilst growing; the two last-named genera differing only in their habit of resting during winter, when they will do with a scant supply of moisture. This is the golden rule with regard to watering, no plant should be allowed to get dry during its growing season, and it is owing to neglect of this rule that so many plants are injured and often killed.

The best example to illustrate how often harm results through allowing plants to get dry before they are again watered is the Ericas. There can be no doubt that for every five plants of this genus that are killed by an excess of water ninety-five are killed by allowing the soil to get too dry before giving them a fresh supply. In the nurseries where Heaths are grown by thousands they not unfrequently perish by hundreds through drought. In a hot summer these plants, which are usually grown in rather small pots by nurserymen and market gardeners, are dried in a very short time if not frequently watered, and as watering is deferred till the plants show signs of drooping it is often too late to prevent fatal results. I had worked this out to my own satisfaction some time back, and I was pleased recently to hear from one of the first Heath growers in England that last season he was forced to the same conclusion. With the drainage and soil arranged so as to prevent stagnation it is impossible to give too much water to a healthy plant when making vigorous growth if it is supplied at reasonable intervals. There is, of course, another evil consequent on excessive watering, and that is its effects on the soil; but it must be plain to anyone who thinks for a moment that to check the absorption of food by the roots, as is done when the soil is allowed to get dry, is to seriously interfere with the growth of the plant, and in the case of delicate kinds to cause serious injury.

There is, however, a group of plants which thrive only when the soil about them is kept uniformly saturated; of these, Sarracenias, Nepenthes, Droseras, many forms, and Aroids are familiar examples. Naturally these plants are either semi-aquatic or are found wild only in very moist climates, and we are therefore bound to supply them with conditions similar to those such plants are always found in in a state of nature. Many Orchids must be placed under this category; in fact, there is no Orchid to which abundant supplies of water is uncongenial during its season of growth. In the case of Cattleyas we have almost reformed the old system of partially dry treatment, which is now replaced by one of abundant moisture whilst they are growing, with a less liberal supply during their resting time. Nature has come to our assistance here, for collectors tell us that Orchids of all kinds are found in greatest abundance where the conditions include excessive moisture during at least a portion of the year. A study of the geographical distribution of these plants points to the same conclusion. We are, therefore, by the above facts driven to adopt that treatment for plants in pots which supplies them with uniformly moist conditions at the roots when growing, large-leaved rapid-growing plants to have a regularly abundant supply, and those with small leaves and of a slow-growing nature sufficient to keep their roots continually moist.

The second point to be considered is the resting period which almost all plants require. There is a popular belief that a plant cannot be rested unless it be subjected to total dryness at the root, and so far as regards a large proportion of the plants we cultivate this is no doubt correct. But there are many plants which are never naturally subjected to periods of drought. In temperate and northern countries vegetation is forced to rest by lowness of temperature accompanied by much wet. Take as an instance the resting season for the plants of our own land. Here we have much more moisture as a rule in winter than in summer, and yet

our trees, shrubs, and herbs cease to grow and go into a state of rest in spite of this. So it is with many exotic and even tropical plants. In many parts of the Malay Peninsula there is absolutely no season of drought, a slight decrease in temperature affording the only change conducive to plant rest. The structure of the plants is sometimes a safe guide in this matter. A *Dendrobium*, *Cœlogyne*, *Cattleya*, many bulbous plants, and plants with succulent leaves or stems, are constructed in such a way as to enable them to endure a more or less lengthened period of drought. On the other hand, *Phalænopses*, *Cypripediums*, *Masdevallias*, along with hosts of other plants, have not that means of supporting themselves during a lengthened absence of moisture. Besides these there are a great many plants possessed of bulbs or tubers which do not appear to be intended to endure drought, as, for instance, the *Narcissi*, *Caladiums*, *Eucharis*, *Crinum*s, &c., which thrive best when kept continually moist. From this it is plain that the structure of a plant cannot invariably be taken as a safe guide to its proper treatment, and in all cases it is best to look first to Nature's plan for information on such points as moisture, temperature, &c. There can, however, be no question about the mistakes which are often made in the management of plants through this idea that to rest a plant it must be kept dry. We do not keep our *Roses*, our *Camellias*, our *Australian shrubs* dry when we want to rest them, and just as the conditions most suitable to them are supplied by lowering the temperature, so also it will be found equally effective with a great many of the exotics we cultivate.

The time to supply water is when it is required—not in the morning or the evening or at any fixed time, but when the condition of the soil is such as to render water necessary. Much mischief is the result of this idea that the watering must be done only once or twice a day irrespective of weather. It is a common answer to the question, "How is it this plant is allowed to get dry like this?" "Oh, I watered last night, and it wasn't dry then." Of course where a number of plants of one kind are grown under the same conditions it is easy to fix a time for watering, but even then the atmospheric and solar conditions should be considered, remembering that on a hot windy day when houses are freely ventilated plants will dry very rapidly as compared with what happens in cooler, less windy weather.

The temperature of the water is a most important question, which is, however, too frequently neglected. If possible it should be a few degrees warmer than the soil, or at least equally warm—it should never be much colder. The feeding points of roots are extremely delicate and sensitive organs, easily affected by a sudden change, and on a hot day, when the soil in the pots has been raised to a high temperature, much harm may be done to the roots by pouring on them water from a tap or from a cold tank. It is a good plan to have a tank constructed so as to allow one or two hot-water pipes to run through it, and, in fact, no house should be considered complete without such an arrangement. More especially is this necessary for stoves and other warm houses. By causing all the rain water from the roofs of the houses to flow into this tank better food is secured for the plants than is contained in tap water, than which rain water is often 50 per cent. better.

In conclusion, what was said with regard to water-room in the article on potting may be repeated here. It is wise to leave sufficient space above the soil in the pot to hold enough water to thoroughly moisten the whole ball, for unless this is done a plant may be watered and yet not obtain more than sufficient water to moisten the top of the ball, and as the best of the feeding roots are as a rule near the bottom of the pot such a watering is of little use to the plant. There is no reason why pots should be filled to the top with soil, as the roots very rarely take possession of the upper inch or so of soil unless the plant has been in it for some time. The whole question of watering plants growing in pots under artificial conditions is directly affected by the condition of

the soil and drainage. If these are bad, then watering, however carefully done, is of no avail; but if good, the action of the roots can go on unimpeded, the soil yielding up its food contents under the action of the water to them, which are ever actively employed in absorbing these liquid foods, and which must be kept constantly supplied so long as the plant is making growth.—W. N.

THE CULTIVATION OF THE ORANGE.

At page 227 your correspondent, Mr. Bond, draws attention to the culture of Oranges out of doors in this country, but as I have had no experience of that part of the subject I will leave it for others to deal with, and confine my remarks to the culture of Oranges under glass from the decorative point of view. At page 64 of No. 1843 (1884), Mr. T. F. Rivers of Sawbridgeworth very appropriately suggests the more general use of the *Citrus* family, and of *Citrus Aurantium* in particular, as worthy of special attention; and anyone who has seen Orange trees, large or small, laden with their pure and fragrant blossoms in spring, and bending in the winter months with their harvest of golden and juicy fruits, will heartily endorse every word he wrote in their praise. I fully support his suggestions, and am curious to know how it is that in these days of luxury (in comparison with 50 to 100 years ago) there is scarcely a suitable structure set apart for their special accommodation in the United Kingdom, whilst numerous dark and costly places, built a many years ago, and called "orangeries," are to be met with, but the majority of them were failures. The Orange is a native of sunny climes, yet they are usually coaxed to linger a miserable existence for a number of years in this country by carrying them out of doors from May to October or November. These, however, rarely possess the vigour, floriferousness, and fruitfulness that distinguish plants grown all the year in a light conservatory, and these latter are again surpassed by plants that have a place in a Pine stove or similar structure. The brisk heat provided during the swelling and ripening of the Oranges ensures the true piquancy and lusciousness of the "golden fruit," contrasting almost as forcibly with the "flat" and almost tasteless imported Oranges too frequently bought in the market as do our best home-grown Grapes with the Continental samples.

Citrus Aurantium and its varieties are worthy a place in every greenhouse. Amongst the best are *Maltese Blood*, *Mandarin*, *St. Michael's*, and *Tangierine*, and for ornament alone *Citrus japonica* is well adapted. This species is very dwarf, fruits freely in 6-inch pots, and when carrying one or two dozen golden yellow Oranges, as several of mine are, they are very ornamental either in the conservatory or sitting-room.

Propagation is effected by means of seeds, cuttings, layers, budding, grafting, and inarching, the first and two last methods being most common. In the case of seedlings fertility is accelerated when a portion of a fruitful plant has been worked on to them by any of the usual systems of grafting and inarching, the only difference being that no clay is used to prevent the action of the air upon the union, damp moss sufficing. Much disappointment and vexation is avoided if small fruiting plants be obtained from nurseries, whence they may be purchased from 2s. 6d. upwards according to size and kind. Supposing that nearly all the readers of the *Journal* have not more than two or three Orange trees under their care, and that those who have a collection of them (such as Messrs. Rivers, Muir, Douglas, and others) need no information from me as to their management, I will try to show how these "members of the majority" may grow their Orange trees with the best chance of success.

In the first place the Orange, during the growing season, delights in an abundance of heat, light, and water; secondly, it must be kept clean; and thirdly, it should have a periodical rest. Of the first three essentials light is the most important. A deficiency of this is the source of more failures than is supposed, and too frequently the cause of failure is wrongly attributed to improper soil, too much or too little water, imperfect drainage, &c., although such may occasionally be the case. If we add to the first cause of failure an arid and sulphurous atmosphere, such as may be generated by flues and fireplaces underneath the structure, then ruin is the consequence. Light being a most important factor, let the trees be placed in such a position that the rays strike directly upon the upper surface of the leaves and all around the plant. Do not put them in the customary "shady corner," or the leaves are sure to fall prematurely; further, do not shade them from the sun unless they are either very sickly or in great danger of being scorched or burned, which is not likely to occur unless the glass is of inferior quality.

Water ranks next in importance, as if the soil is tolerably open in character abundant supplies will be required from April to October, after which time it must be applied with a more sparing hand. The soil being allowed to become dry, but not dust dry, before it is applied. If drought is carried to extremes during the winter months the trees cast their leaves prematurely, thus weakening the trees considerably. The Orange being an evergreen, leaves should remain on the trees at least two seasons. In one of the most noted gardens in the kingdom this drying-off process was at one time carried so much to the extreme that when the plants were placed in their growing quarters in the month of April they resembled deciduous trees, and the flowers were consequently very scanty and fruits few.

As to heat the Orange is very accommodating, but I think it is better not to expose it to any frost, although it may endure a few degrees with apparent impunity, whilst in a high and moist heat they luxuriate. Those who possess only one glass structure should give their Orange trees the lightest and warmest position, and a good syringing about five o'clock on summer evenings will benefit them exceedingly. Fruit grown under these conditions are generally ripe the following spring, but if it were convenient to keep them in a high temperature during autumn and the beginning of winter, they will be ripe much earlier, and will be of better quality than those ripened in a low temperature.

Cleanliness is important. Dirty foliage of any kind utterly destroys the beauty of plants, and of Oranges and Camellias in particular. Frequent syringings will do much to keep them clean, but an occasional sponging is absolutely necessary; nor is it wise to delay this operation too long, even under the idea of economising labour. For the black fungus incidental to them, brown scale, woolly scale, and mealy bug, a solution of Gishurst or softsoap and water will suffice if the leaves and shoots are carefully cleaned with a sponge.

If the trees are kept in a greenhouse during the winter close to the glass, and water is carefully given as previously advised, they will have all the rest that is necessary for them.

As regards potting, &c., the soil used here is composed of two-thirds fibry loam, one-sixth charcoal, and one-sixth dry cow manure. Two of our largest trees were put into tubs 2 feet square on the 25th July, 1878, and the above mixture was used. Nothing more has been done to them from that day to this. They receive an occasional sprinkling on the surface of artificial manure, and sometimes a watering with weak stableyard manure. They produce abundant crops of blossom and fine luscious fruits. Citrus japonica was placed into 6-inch pots three years ago, and in these they still remain and annually produce one to two dozen fruits. It is almost needless to say that the drainage should be made as perfect as possible at the time of tubbing or potting. My Orange trees have to conform to the requirements of the other occupants of the house in the matter of temperature. During the months of May, June, and July they have a temperature of 80° to 90° with sun heat during the day, and about 65° at night time; for the remaining months of the year they have ordinary greenhouse treatment.

In conclusion, permit me to say to the inexperienced, Expose your healthy Orange trees to the direct solar rays, and if they are sickly throw some slight shade over them when the sun is very bright and hot as required until they have recovered their natural health. Be careful with the watering at such times. Shake out and repot only when the soil has become exhausted, sour, and inert, or the drainage stopped.—HORTULANUS.

[Accompanying these notes were some beautiful sprays of Orange blossom, the leaves and flowers proving by their healthy appearance the excellence of the culture the plants receive.]

HORTICULTURE.

HORTICULTURE is the employment of many, and so also is it the enjoyment of many. I propose now to take the amateur view of the subject. My contention is this—that horticulture has an elevating tendency. The striving after the better in whatever field entails a greater elevation of thought and feeling. There is a fascination in horticulture which its votaries find hard to throw off. There is always something to strive after. No one recognises—for it is far from the fact—that we have reached the ultimate success we continually strive after; perfection is never attained, and we cannot but recognise that year by year we go forward we gain one step in the improvement of our different strains of flowers, fruit, and vegetables. I am simply an amateur vegetable grower; I claim no higher niche; but still my cry is the same as Tennyson's lunatic "Excelsior." Higher we can go, and higher we must go, if we wish to keep up with our contemporaries. It is a small idea to many men that we should wish to grow better vegetables than others, that we should wish on the same

ground to grow double the crops of our predecessors. So be it. Let our aim be, say I, to strive after a perfection we cannot ever attain perhaps, but on which road we may erect a forepost, and, beyond, our successors will do their best to plant their stations. I claim for horticulture an encouragement, a kindness, an equality, a fraternity, for which no republicanism has an equal. "Egalité, Fraternité" has no attraction for the gardener.

All gardeners whether gentle or simple are pleased to put themselves on one equal to learn in sweet converse together of the things they love. Brotherly love together nowhere attains its highest altitude as amongst horticulturists. We are all learners in Nature's vast realm. Where else—in what way of life—would a poor ignorant striver after the highest (in vegetable culture) obtain such kindness, such encouragement as I have done from gardeners who have distinguished themselves as foremost men? As a very young beginner I found Mr. Earley ever ready to teach me by letters the time to write which he could ill spare, and later our worthy Editor has in his correspondents' columns an ever-ready word of kindness for the learner. Such men as Mr. Gilbert, Mr. Pitcher of Crix Park (a man little known perhaps, but through modesty alone), and others of high standing I have ever found ready to pour out their wealth of experience for me and such as me. All honour, say I, to horticulture, for in no other walk could we obtain such kindness and help. As I trust our Editor will admit this I must not say a word about him; but I know what a helpful hand he has and how kind.

How ready do we find a brother horticulturist to endeavour to supply our wants in anything we have run short of, or to offer for our trial some novelty we have not and of which he has little enough. This readiness to give is general amongst gardeners, and bespeaks a generous nature. Again, who so ready to show you their charges, to satisfy your every inquiry, as gardeners generally, which gives them warrant to claim politeness as their own? I know no class amongst whom there are so many self-taught men—men whose education when young boys was practically nil, and who have by their own exertions in their few hours of rest gained for themselves a very fair knowledge of geometry, Latin, and history, with a sound basis of English grammar. I alluded above to our Editor's correspondents' column, and my reason was this. I was once talking with one of these self-taught men—one who is one of Nature's gentlemen—and he asked what part of our Journal I liked best. I could not answer off-hand, but said I liked the articles on vegetables best, because I understood them, whilst much was above my head. He then said that he considered the correspondents' columns far the best—that he had learnt more from them than elsewhere, and that if his time was so occupied that he could not go through the whole paper he went through the correspondents' columns alone.

Horticulture gives us health, and if our time were otherwise unemployed it gives us occupation and an interest, for if once we enter into it the deeper do we desire to go. We cannot—like the gambler his cards—resist its fascination; but whereas he lowers his every power and thought by his pursuit, we strengthen and elevate ourselves by ours.

The agricultural labourer who cannot amuse himself and frequents the public-house would more surely be kept away by encouraging and implanting a love of horticulture in him. Let our country clergymen work that out.

And now if I have not already trespassed too far I must arrest my errant pen.—H. S. EASTY.

PROPAGATING TUBEROUS BEGONIAS.

NOTHING probably in connection with plant culture is calculated to hold forth such hopes for so lengthened a period and to prove so generally interesting as that of raising plants from seeds, and especially of fine hybridised strains of choice florist's flowers. The tuberous-rooted Begonias are fast growing in public favour, and will become one of the standard summer bedding plants of the future. Already many fine strains of these are being annually offered to the public, and few plants are more easily managed or adapt themselves to a greater variety of circumstances. For suspending in baskets what can vie with the variety known as *Pæoniæflora*, which is aglow with flowers for several months in the ornamental rockwork in the conservatory? Allowing them to ramble at will they have a most pleasing effect, while as summer bedding plants they are unique, producing from amidst abundant and sturdy foliage large and well-formed flowers, from the most brilliant crimson to the softest and most pleasing combinations of rose, flesh, pink, salmon, and white.

The seeds of these Begonias are particularly minute, and much care is needed when making sowings of them. The most suitable soil or mixture of soils is leaf mould, loam, and peat in about equal parts, with a liberal addition of sharp sandy grit. The pots or pans should be well drained and filled with the soil to within half an inch of the rim of the pot, making it moderately firm, after which level

the surface and sift a little sand over it; by so doing the operator can easily discern where the seeds fall, and so avoid overcrowding, for many hundreds of seedlings are lost by the non-observance of this matter. Sowings may be made from the first week in February till the middle or end of April. The earliest sown are now making their third leaf, and will be ready for pricking off in a few days, an operation which will need skilful hands and ever-watchful eyes. A temperature of 50° by night and 60° by day (and considerably higher if by sun heat) will suit them. The seeds need not be covered with soil; but to prevent it becoming dry frequently they may be kept in the dark for the first three weeks after sowing. Avoid a too brisk heat, which will often ruin a batch, or tends to weaken them.

Another mode of propagation is by cuttings, an operation attended with considerable difficulty and oftentimes with loss, owing to the very succulent nature of the stems or new growth. The earliest tubers to start will, according to their size and strength, be producing growths somewhat freely, the longest of which will be from 3 to 6 inches. There is therefore not a moment to be lost, since this is the only means of increasing the stock of choice named sorts, save that of cutting the tubers wherever a break is visible and placing them in sand for a week or so. This, however, must be done just as the breaks are pushing, and, where the tubers are large and numerous breaks are produced around the apex, it will be the more easily accomplished. The cuttings should be placed singly in 2½-inch pots, using soil similar to that prescribed for the seeds. If possible secure a piece of bark from the tuber with each cutting, and failing this take the cutting as low as possible. Where the cuttings or growths are produced from the hollow crown there is not that chance of securing bark as there is when the breaks are produced, as they are in some varieties in quantity from around the top of the tubers. As these cuttings are most impatient of undue moisture the following rule will be found both simple and reliable. Insert the cuttings as early in the day as possible; place them in the propagating case, and keep it close, in a temperature of about 60°; remove the lights towards the evening and give a thorough watering, leaving the lights off all the first night to allow the tops to become thoroughly dry; replace the lights in the morning, and keep the case close and shaded from sun. Avoid wetting the foliage after this until they are rooted; any that require water should be taken out singly and watered thoroughly. By being plunged in cocoanut-fibre refuse they remain sufficiently moist for some days after the first watering.—J.

DUKE OF BUCCLEUCH GRAPE.

GRAPES CRACKING.

WHEN I stated in my last communication that I thought Mr. Thomson made a mistake in recommending the Duke as an early Grape, I certainly in no way meant to imply that he wilfully intended to mislead or do anything but what was honourable and straightforward. The fact that the Black Hamburgh is acknowledged to be the best early Grape, and as Mr. Thomson stated in his circular, "the Duke ripens three weeks before that variety," naturally led Grape-growers who were guided by his statement to the conclusion that it would be a desirable acquisition for early forcing. Therefore many gardeners planted it in small early vineries—just the sort of houses of all others it should never have been placed in, hence the many recorded failures and unjust verdicts that have been given against it.

I am grateful to Mr. Thomson for supplying the information to prove that splitting or cracking of Grapes originates with the roots. I admit his argument reads plausibly and convincing, but facts are stubborn. Mr. Thomson tells us "certain plants that are vigorous rooters and growers are more likely than those less so to send up a larger quantity of sap. This I have found a special characteristic of the Duke. When the growth of the Vine is allowed to extend in foliage and branch much of this great flow of sap is appropriated; when not so appropriated the attractive power of the fruit secures a greater share than its skin can hold, and it splits." Now if the fruit secures more sap than its skin can contain, how does Mr. Thomson account for the fact that not one drop of this said to be surplus sap oozes out through the apertures? I can understand sap flowing from the roots and splitting the berries in such cases as that so graphically described by Mr. Thomson himself in his "Practical Treatise on the Grape Vine." "About the 15th of April the sap began to rise in the Vines, and some of the berries that were a little shrivelled suddenly got plump, while others that had shown no signs of shrivelling burst their skins, and the sap of the Vine that had forced itself into them began to drip from them. To stop the bursting of the berries I made an incision in the lateral on which they hung betwixt it and the parent

stem of the Vine. This drew off the sap, and no more berries burst."

Mr. Thomson advocates extending the foliage and shoots as a preventive of splitting. This reminds me of a case I observed when visiting a great Grape-growing friend, who had also imbibed the theory that extending the foliage would be a preventive of berries splitting. He carried his hobby to such an extent that on the occasion of my visit the laterals hung in festoons from the wires down to the borders, but notwithstanding all these leaves he candidly admitted that in all his experience he never had so bad a case of berries splitting as was in that house then. Like Mr. Thomson and others I at one time had a strong belief in the infallibility of the nicking or gimleting trick, and if it did not always happen to be a perfect cure, I put the failure down to the operation being imperfectly or clumsily performed. Four years ago my simple faith received a severe shock, for that year a great show was looming in the distance, and I determined that no stone should be left unturned on my part to have the Duke and Golden Champion well represented, and for a month before August 24th I carefully watched these Vines every day and had the laterals nicked, and it was with no small amount of satisfaction that I, on the day prior to the show, was enabled to cut two bunches from each rod without a spot or crack on the berries. These were duly taken to the Manchester Grand International Exhibition, and were staged under a canvas tent. A great quantity of rain fell on the second and third days of the show, the fourth was bright and hot, consequently the tents were saturated with moisture, soon presenting an atmosphere more like that of a plant stove than an exhibition tent. On removing these bunches the same evening I was surprised to observe the majority of the berries were cracked. Now this cracking could not by any possible means be caused by sap passing from the roots, for on returning home I found the remaining bunches left on the Vines were still without a cracked berry. Since then I have entirely given up the mutilating practice, and find our Grapes to be freer from that evil than they ever were when operated upon.

Mr. Thomson admits that gimleting is the result of an alarm, and, as is usual in such cases, some supposed remedy is resorted to; but with the discovery of splitting, a drier and more airy atmosphere is maintained, and thereby the cracking checked, quite as much, if not more so, by the change of atmosphere than by the gimleting operation. I have proved that the gimlet alone will not stop cracking, and I can prove, and will be pleased to show Mr. Thomson or anyone else interested in this question who will favour me with a visit next August or September, that splitting can be prevented without any operation whatever upon the laterals.—J. McINDOE.

CHRYSANTHEMUMS.

CHRYSANTHEMUMS to be grown for conservatory decoration or exhibition will now need strict attention. The more forward batch should be well established in 3 or 4-inch pots, and if convenient should now have a shift into 6-inch pots. Any of the later-struck ones, or new varieties that may have been added to the stock, should now be well rooted in 60's and fit for a shift into 4-inch pots to insure strong plants for a fair trial this year. Many of the new varieties, especially the weaker-growing ones, form premature bloom buds on the point of the shoots when about 4 or 6 inches high, the result chiefly from the severe propagation they undergo to get sufficient stock, many of which are propagated from the side shoots. These buds should be cut out with a sharp knife to the first strong leaf, so as to induce the growth of a side shoot.

Many of the varieties are subject to a kind of rust that attacks the whole plant when in a young state. I scarcely know whether it is a disease or caused by insects, but none are discernible to the naked eye. I hope at some future time to more fully investigate it. If the plant from the above or any other cause is entirely blind and ceased growing, I should cut it down about half way and place it in a little bottom heat. A cucumber frame or propagating pit would be a suitable place, when most times they will throw up a good strong shoot through the soil from the base. If the plant has still got its leaders intact, but the lower foliage unhealthy, crimped, and rusty, I should advise placing in a warm vinery or similar place, where they could have the benefit of a little artificial heat to help them to grow out of it. F. A. Davis, Balmorean, and Mrs. J. Mahood are naturally weak growers, and I have found them subject to it; but it is not always confined to the weaker ones, for all the varieties of the Queen family have, with me, been affected at different seasons. Hitherto the weather has been too unkind to risk the plants out in open quarters, but all established plants should be in cold frames or pits, with the lights drawn off all day, and closed only late in the evening to insure strong sturdy growth.

Amateurs or others with less conveniences should have all stock now potted separately in 60's and kept in the coldest part of the greenhouse or other structure where abundance of ventilation can be given when established, and so hardened ready to be placed out of doors on a bed of coal ashes in a sheltered place as soon as all danger from frosts is over. If

established in small pots they should be shifted as mentioned above, using a compost of two-thirds yellow loam or top spit, and one-third of well-decayed cow manure, leaf mould, or horse manure, or a little of each with a good sprinkling of sharp sand, especially if using cow manure. A few broken bones over the crocks at the bottom would be a great assistance to them.—C. ORCHARD.

CARPET BEDS.

THAT carpet bedding is not extinct we know from inquiries that have been reaching us of late, and to meet the requirements of persons who are thinking of adopting this method of garden decoration we submit one of Mr. Graham's Hampton Court designs for a bed or border.

This bed at No. 4 is to be raised about 4 or 5 inches above the surrounding ground, and it is so arranged as not to take a great variety of plants, which many gardeners in private places may not possess. The whole groundwork No. 2 is to be planted with *Herniaria glabra*, which is as hardy as the grass of the lawn, and it is so easily propagated that a good sod of it torn to pieces and stuck in now with the finger will make an excellent groundwork. The design is capable of being extended to any length of bed, or one side of it would do very well for a long border, and the suggestions given for planting are both cheap and effective, but of course there are hosts of other plants which can be worked in according to the taste of the planter.

NOTES FROM BULB-LAND.

THERE may be many readers unacquainted with that quarter of the globe from whence are annually exported to this and other countries

hardly begun, otherwise his proverbial love of flowers might tempt many a roving Briton to depart for a brief space from the beaten track for the purpose of spending a day or two amongst them. In many respects he might do worse. There is no picturesque scenery to be found, no imposing effect of rugged precipice or snow-crowned heights, no food for romantic thought in the sight of ruined castle or monastery; but if, as is almost certain to be the case, the tourist has wandered on Alpine slopes and viewed with delight the wooded and turreted shores of the Rhine, he will have had his fill of these, and will find welcome relief in bulb land's vast stretches of brilliant bloom.

So numerous are the travellers who annually seek a health-deriving change from British to Continental cities that every effort has been made by the various railway companies to organise cheap and expeditious routes. They have succeeded well. In a few hours the traveller from London can reach Paris, and thence as the centre of operations he can traverse the whole of Europe. Similarly rapid, though necessarily longer, is the journey from London to Amsterdam or other Dutch towns. The *voyageur* may dine in London between 6 and 7 p.m., cross the German ocean and quietly enjoy his breakfast as the steamer surges her way through the sluggish waters of the Maas, and lunch in Amsterdam at noon, so that no time is lost in the journey from England. English visitors during the summer are very numerous in Holland, which accounts for the fact of English being spoken so widely by the officials at the stations and quays. Even the non-official gentlemen who lounge about—blue-bloused and wooden-booted—possess a smattering of the language. But these are of an extortionate turn of mind, and the eloquent earnestness of the successful competitor in a wild struggle amongst a dozen or so for the possession of your bag affords ample proof that he is

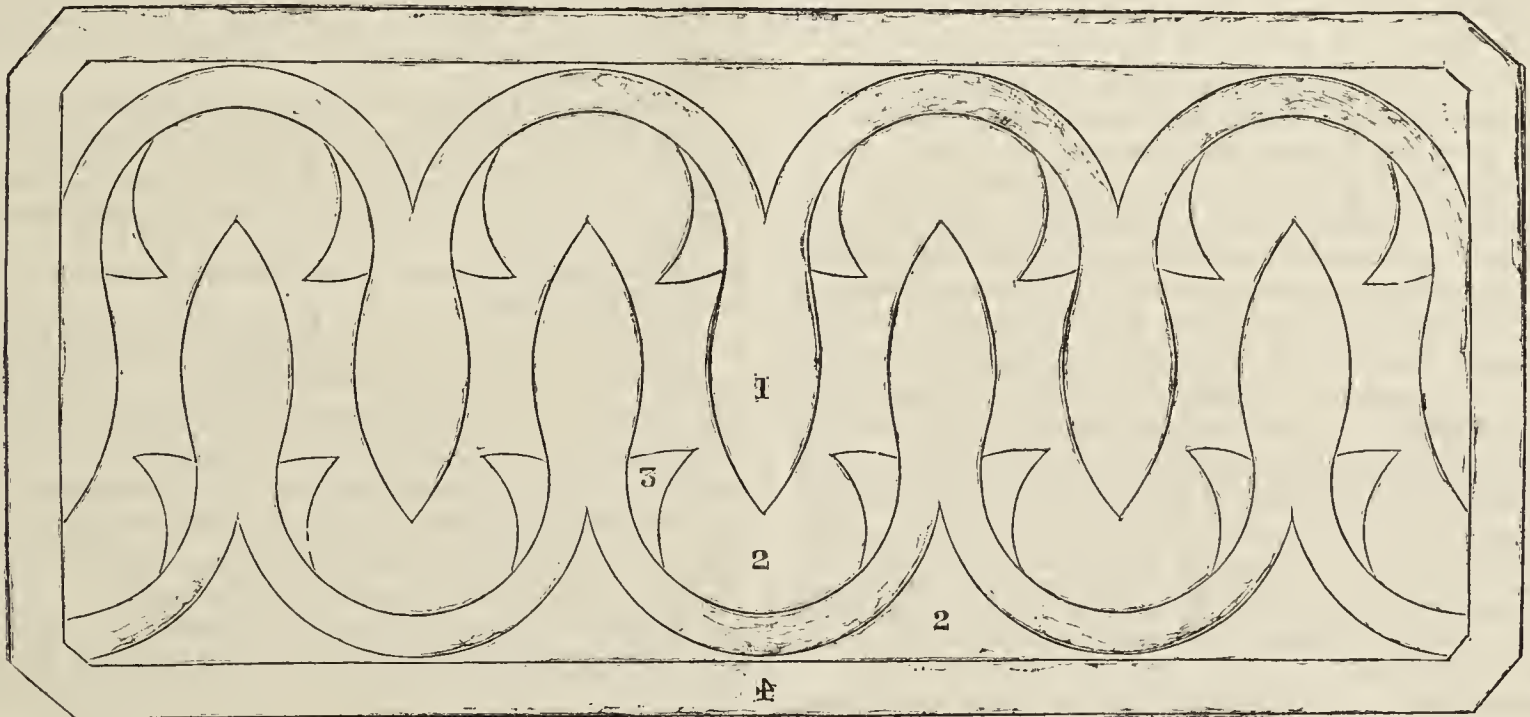


Fig: 54.—Carpet Bed.

1, *Alternanthera* of any kind. 2, *Herniaria glabra*. 3, *Leucophyton Brownii* or *Mesembryanthemum cordifolium variegatum*. 4, Two rows of *Echeverias* and a little *Sedum glaucum* planted among them, or *Sedum glaucum* alone.

many tons of Hyacinths, Tulips, Crocuses, Narcissi, and other bulbs. It is about twelve miles from Amsterdam, and in and about Haarlem, that this "flowery land" may be found. From a few square miles of country in the neighbourhood indicated are procured the thousands—nay, millions—of Dutch bulbs which adorn our windows and greenhouses in the early months of the year, maintaining with a beauty and sweetness all their own the floral display at a period when attractive flowers are especially welcome in greenhouse and border. But not alone because they worthily fill a much-felt void is it that Dutch bulbs are so extensively grown and so highly appreciated. The many uses to which they may be applied and their easiness of culture would insure them a prominent place amongst reigning floral favourites, even if their period of bloom was the season when flowers are most plentiful. Dutch bulbs, in fact, are indispensable, and thus it is that bulb land, in the eyes of all lovers of flowers, is the most interesting part of an interesting country.

The great majority of the numerous tourists who annually wander hither and thither over the face of Europe do not "do" bulb-land. The masterpieces of Rembrandt and Rubens draw them in crowds to the Hague; and Amsterdam, replete with a thousand features of interest to those acquainted with its Old World associations, must of course be visited. A certain number even reach Haarlem, the magnificent church with its famous organ being the main object of the visit. But these visitors are mostly disciples of music, and far from numerous—certainly not a twentieth of their number are aware that almost within the precincts of the "Groote Kirk" may be seen spreading fields of magnificent bloom, affording in their brief season of beauty a natural effect far more interesting than the artificial colouring of even Rembrandt's master hand. It must be admitted, however, that at the time when these wonderful flower farms are at their best—towards the end of April—the touring season has

aware he holds the key of the situation when he demands an extravagant sum for his trifling services.

In Rotterdam, as in all other Dutch towns, visitors cannot fail to have been struck by the remarkable cleanliness which everywhere prevails, and which seems to characterise everything and everybody, in striking contrast to London and other large towns in Great Britain. There is plenty of water, and it is used freely. Houses, roads, walls, vehicles, all are clean and neat; even the children who play in the streets always seem to have a presentable appearance. There is a splendid park, the resort of crowds of visitors on Sundays and during fine evenings in summer; but no flower beds. To see flowers we must travel on.

When the town is left behind and the open country is reached the traveller has an excellent opportunity of comparing the scenery of Holland with that usually seen during a railway journey in England. The difference is most striking, and well illustrates the great contrast in the configurations of the respective countries. In Holland nothing but vast stretches of perfectly level meadow land can be seen for miles. This has been aptly described as the "grazing ground of Europe." It is intersected by drains or canals at frequent intervals—in fact, the land seems to be divided into very small allotments, many not exceeding an acre each. But all is grass land; there is no sign of husbandry, nor those pleasing features of English landscape—broad expanses of corn land and pasture, grassy hollows and wooded slopes, with a background, seen dimly and faintly, of some lofty summit. All these are wanting in Holland. Water and windmills are the most prominent features in Dutch scenery; but the quantity of both is too great for the effect to be everything that could be desired.

It is not until nearing Haarlem that flowers appear—large and showy beds of blue, white, and yellow Crocuses on the land of the General

Bulb Company near Vogelenzang. The different colours are planted in masses of about half an acre each, and they produce a very fine effect. Haarlem is a town of some importance. Apart from the position it holds as the centre of the bulb industry, its commercial interests are not inconsiderable, while the many incidents pointed out in connection with its memorable siege prove interesting to the historian. Its chief attraction to strangers, however, is the great church with its magnificent organ, famous throughout the world. In its external aspect Haarlem greatly resembles most other Dutch towns; the same high narrow houses and cobble-paved streets, and the same remarkable cleanliness are everywhere seen. It is in the environs of the town and in the surrounding villages that the bulbs are grown, and it is from Haarlem that they are sent in the autumn to all parts of the world. Large quantities are sent to Germany, Austria, Russia, Norway, and Denmark. England and Germany absorb the largest proportion of the whole exportation, but those of the best quality are invariably sent to England. The Dutchmen find that the motto in England is "The best, not the cheapest;" and so to this country they send the cream of their stocks.

It may, perhaps, not be uninteresting to describe the system of operations by which the millions of Hyacinths, Tulips, Crocuses, Narcissi, Scillas, and other flowers are produced for sale. There are, however, natural advantages which enable the bulbs to develop and ripen to a degree impossible in any other part of Europe. Of these the most important is the soil. This is a grey sand, exceedingly porous, yet fertile, and admirably calculated from its texture to not only promote the proper growth of the bulbs, but also to permit of their being removed from it easily and cleanly. For a depth of several feet not a particle of soil of a clayey or chalky nature can be found; it is pure sand, and crumbles as readily in the hand as sand from the seashore, although considerably coarser. Thus the water from the surface passes freely through, and the soil round the roots of the bulbs is never sour or stagnant. But the water does not descend far; at a depth of 4 or 5 feet—more in some places, less in others—it is arrested by the subsoil, which is of a far heavier nature, and very tenacious of moisture. Here water is constantly held, and the moisture rises to supply the roots of the plants with a necessary portion of their food, and they ripen under a cloudless sky. Thus the exact conditions required for the welfare of the bulbs are constantly provided. The fertility of the soil is maintained by the liberal use of cow manure, which is spread on the surface, its virtues being washed in by the rain. Manure is the most expensive item in the culture of bulbs, but good dressings are given annually to the land, otherwise roots of the finest quality are not produced. The bulbs are planted in beds about 4 feet wide and 20 feet long. Hyacinths and Tulips about 5 inches apart, and smaller roots, such as Crocuses and Scillas, about 2½ inches asunder. That they make a magnificent display when all are in bloom can easily be imagined. An acre of Hyacinths in numerous shades of colour is a flower bed to be remembered, but at the time of our visit they were, with one or two exceptions, only just showing colour. One Hyacinth only was in full bloom at that early period—namely, *Homerus*, a light red variety. It is little grown in England, but is largely cultivated in Germany on account of its remarkable earliness, which should certainly render it desirable in this country. Of the others, *Norma* and *Grand Vainqueur*, two very popular sorts, were most advanced. Tulips were not showing flower, but magnificent stretches of Crocuses and Scillas afforded an idea of the grand display on these farms when the Hyacinths and Tulips are at their best.

In a necessarily brief stay in bulb-land only one of its many flower farms could be visited, that of Messrs. F. & H. Van Waveren, Hillegom, an offshoot of the world-renowned firm of M. Van Waveren & Sons, who have annually exported vast quantities of bulbs to all parts of Europe during the past century. The magnitude of their trade is, indeed, astounding; and the young firm is adopting the same plan which has maintained the prosperity of the old one for so many years. Quality is the watchword of the Van Waverens, as of all the noted growers. All the sorts most popular in England are grown in large quantities there. Such Hyacinths as *Robert Steiger*, *Von Schiller*, *Norma*, *Gigantea*, *Queen of Hyacinths*, *Lord Macaulay*, and others amongst reds; *Grand Vainqueur*, *La Grandesse*, *Madame Van der Hoop*, *La Tour d'Auvergne*, *Mont Blanc*, *La Franchise*, and *Grandeur à Merveille* amongst whites; and *Argus*, *Baron van Tuyl*, *King of the Blues*, *Charles Dickens*, *Grand Lilas*, *Lord Derby*, and *Grand Maître* amongst blues, being grown in thousands. But numerous others have to be grown too, and the vast stretches of glowing colour must produce a superb effect. The floral display does not, however, last long. Hardly have the spikes fully developed their brilliant flowers before they are cut and consigned to the rubbish heap; the foliage, of course, being left to provide nourishment for the bulbs. Thus shorn of their beauty, the farms are singularly uninteresting to the stranger for the remainder of the year, but the cutting-down process inaugurates a season of busy work for the growers. In June all the bulbs are taken up and spread on large shallow trays under cover to dry and ripen, and two months later they are ready for distribution. Then when all the orders have been executed in autumn the planting season is at hand. All the bulbs placed aside for stock, together with whatever surplus there may be of saleable bulbs, being planted for future supplies.

The mode of propagation adopted is simple in the extreme. A deep slice is cut down the centre of each bulb, in which young offsets grow. These are taken off and planted, and in about three years they are of saleable size. Successive batches are yearly coming to maturity, and so the supply is maintained. Another mode of propagation is to divide the old bulbs transversely, throwing the bottom or root portion away, and planting the other with the cut surface downwards. Bubbles form on this,

to be subsequently taken off and grown until they are large enough for sale. In winter, after a covering of straw has been placed on the beds to protect the bulbs from frost, work on the farms is at a standstill until the spring. This is the yearly round of work conducted by the firm alluded to, as described by its courteous head, and on all the farms of bulb land the *modus operandi* is precisely the same.—A YOUNG TRAVELLER.

SEASONABLE NOTES ON FLORISTS' FLOWERS.

Auriculas.—This is the season when all the anxiety and trouble of the past twelve months is amply repaid to the grower of these quaint spring flowers. As day after day masses of his favourite sorts expand their beauties, he is fain to confess that although other flowers are more brilliant and many less formal, there is a charm in the *Auricula* which detains him when other flowers cease to please; while to the raiser of seedlings there is the ever-recurring excitement of raising some novelty which is to eclipse all others that have gone before. My own collection, not a large one, and reduced very considerably by the unfortunate baking which it got on the day of our church re-opening, looks better than I have seen it for some years. It has been brought into a small span-roofed pit into which I can walk and leisurely survey the plants, a far better plan than having them in frames, which have to be tilted in order to get a view of them. The glass has been "whitened" over so as to keep them from the glare of the sun. They now require a good supply of water (rain where it can be had), and of course the pots to be kept clear of weeds. Should any green form on the surface of the pots the soil had better be stirred up a little. Offsets may also be taken off if rooted, and potted into small pots. Some varieties increase fairly, others give very few. Unfortunately I shall be debarred from seeing the *Auricula* Show at South Kensington this year. H.M. Inspector of Schools has fixed that day for his annual visit, and he is a functionary we parsons dare not neglect. After the bloom is over the plants should be removed to a northern aspect to be ready for repotting.

Carnations and Picotees.—As I have already explained I only grow these in beds. The winter has been a favourable one, and my losses were very few. I had kept a few in small pots, so that these were ready to supply the places of those that had perished. The bed has been stirred over, and the sticks will be placed to them in a short time, and as the flowering stems lengthen they will be loosely tied to them, but they have not as yet made any start; in fact with us things are generally more backward than usual.

Gladioli.—These ought all to be planted this month. My own beds were planted in March, and no delay should now be made in getting any roots that are out of the ground now planted. I have not, as a rule, found that it makes much difference as to the time of blooming. Certain kinds are sure to bloom early, and others late whenever they are planted. Shakespeare always blooms by the end of July, and Phœbus and *Kelway's* Duchess of Edinburgh never until far on into September. I have this year used road grit instead of sand round the bulbs when planting, but I have never found that any plan is better than another, and this will probably be no better or no worse than charcoal and sand, which I have before used. The beds must be kept clear of weeds.

Chrysanthemums.—I have just given these their first shift from thumb pots, in which they were struck, to 32's. In these they will remain until they get their final shift. I do not grow for exhibition, and therefore my practice may not be suitable for those who do. My object is to get nice stocky plants for home use, and as my space is very limited I cannot cultivate as liberally as I might do had I more room; and my desire is not to get a few large blooms, but a large number of fairly sized flowers and stocky plants, instead of long-legged flamingo-looking things with a bloom or two at the end.

Ranunculuses.—There is little to be done with these at present. I have never known them to remain so long in the ground without appearing above it as this year. Mine have been planted nearly two months, and are only just beginning to show themselves—the result, I suppose, of this period of dry searching winds, which has effectually counteracted any good that might have resulted from the mild winter. When they have appeared the beds will be gone carefully over, slightly stirred, and the soil pressed round the neck of the plants, the *Ranunculus* requiring a good firm soil.

Roses.—Not being an exhibitor, I have to consider more what may best suit my garden than the flowers which I may have fit for an exhibition table; consequently, instead of having my beds even mulched over, I have raked off all the long strawy stuff of the winter mulching, and have forked in the short material into the beds. They have been smoothed over a little and look tidy. These remarks do not apply to Tea Roses, which have not been as yet pruned, although that operation may be carried out as soon as may suit the convenience of growers. I have advocated hard pruning for them as well as for Hybrid Perpetuals, and still believe when you want to get good growth and fine flowers it is preferable. I hard-pruned my principal Tea bed last year, and so much growth has been made that the plants are now touching each other. If I prune them hard again this year I shall have the bed probably too full. I shall therefore this year merely shorten the shoots. Another bed which I did not prune hard, and which requires more filling in, I shall cut hard so as to induce more growth. A third bed is not planted yet. The plants were received last autumn, and have been laid in all the winter under a wall, and covered over during severe weather. As they are taken up they will be pruned close, and planted immediately in a bed which was prepared in the autumn and has been left rough all the winter. The wood of

Roses was so thoroughly ripened last autumn, and the winter has been so mild, that all may, I hope, anticipate a good Rose season.—D., Deal.



M. ERNEST BERGMAN requests us to announce that a BOTANICAL and HORTICULTURAL CONGRESS will be held in Paris in May next during the time of the International Flower Show. Further particulars as to dates and questions to be treated will be duly published. Gentlemen wishing to become members of the Congress can write at once to the President of the Society, 84, Rue de Grenelle, Paris. The Congress Committee named at the last meeting of the Society is composed of the following gentlemen:—Messrs. Duchartre, a well-known botanist; Chs. Verdier, Ferd. Jamin, Truffaut fils, and Bergman fils.

— AT a general meeting of the ROYAL HORTICULTURAL SOCIETY held this day, Sir James Tyler in the chair, the following candidates were unanimously elected Fellows—viz., C. Bloodworth, W. Butcher, Mrs. Bramwell, John Brill, William Brockbank, F.L.S., F.G.S.; George Browning, George T. Chambers, Walter Christmas, William Bedford Dyson, John Edwards, Charles J. Gapp, J. T. Gideon, Hugh Roumieu Gough, F.R.I.B.A.; Richard Grice, Mrs. Hatch, Thomas Every Innous, N. Kempthorne, Benjamin Thompson Lowne, W. H. Mann, M. L. Massouee, Frederick McTier, W. D'Arcy Godolphin Osborne, W. J. Plaister, Newton Pratt, T. A. Rolls, M.P.; A. O. Saunders, Thomas Simpson, J. Surrey, Charles Todd, Frederick Tyler, and Wm. Layton Vincent.

— WE are requested to state that at the LIVERPOOL SPRING FLOWER SHOW, in Class 26 for three Azaleas, H. Cunningham, Gorsey Cop, Gateacre, was awarded the third prize and the first prize for one greenhouse Rhododendron, with a good plant of Countess of Haddington.

— IN the note last week on ANGRECUM SESQUIPEDALE at WESTBROOK, Sheffield, it was intended to state that the spurs (not the sepals) were 12½ inches long.

— A COLLECTION of WHITE CINERARIA BLOOMS submitted to us by Messrs. J. Carter & Co. recently contained a remarkably fine variety, named Snowflake, pure white, and not dingy or dull, as many so-called white Cinerarias are, the blooms being moreover of good substance and well formed. It is an excellent variety, much the best that we have seen.

— EVERYONE is familiar with the good qualities of HORSERADISH, but a daily paper announces some serious results from eating it. "Six valuable heifers belonging to a farmer at Denton, near Canterbury, have been killed by eating Horseradish." This vegetable contains a large quantity of sulphur, and the oil, when extracted, is very pungent and corrosive, but in its fresh state the root is usually extremely beneficial, assisting digestion.

— WE are informed that Mr. J. CLARKE, late of Moor Park, Farnham, seven years gardener to Lord Hastings, and formerly of Farnham Castle, has commenced business as seedsman, nurseryman, and florist at the Albion Nursery, Farnham, Surrey.

— AN American paper, referring to THE VALUE OF STRAWBERRIES, states that "Dr. P. E. Johnson, of Jacksonville, has the reputation of being a very successful Strawberry culturist, his crop of three acres netting him a year ago 5000 dollars." Anyone who could in England realise £330 per acre for Strawberries would undoubtedly deserve to be considered "successful," but they are accustomed to big things in America.

— WE have received copies of several letters that have passed between Mr. W. Howard, Southgate, and Mr. John R. Bourne, Bedford Office, Bloomsbury, in reference to the system of PORTERAGE at COVENT GARDEN MARKET, from which it appears that vendors are compelled to employ the market porters only to convey their goods from their carts to the stacks. It is stated by Mr. Howard that there is no regulation to this effect posted in the market, that it subjects the vendors to considerable inconvenience, and that many consider the rule very arbitrary.

— A PRECOCIOUS CHRYSANTHEMUM.—It does not seem improbable that Chrysanthemums may soon be had all the year round if we require them. A fortnight ago we had beautifully fresh blooms of Mrs. C. Carey sent to us, and now we have a plant of the new Japanese variety, Mr. J. Laing, quite attractive by its rich distinct flowers and amber centre. When the flowers develop in the autumn the florets incurve, and the amber of the under sides is the prevailing colour; but the flowers now so attractive are reflexed, except a few small florets in the centre. The plant is about 9 inches high in a 3-inch pot, the three stems bearing flowers, of which two are expanded. The plant was brought to our office by Mr. Wright of the Middle Temple Gardens, and a few similar examples would be effective in conservatories. Mr. Wright states that all his young plants of this variety are flowering prematurely, whether propagated from side shoots or cuttings. Mr. Orchard refers to the precocity of certain new varieties in another column, and suggests a cause for the circumstance.

— REFERRING to the recent note on SIXPENNY TELEGRAMS, Messrs. James Carter & Co., High Holborn, write:—"The discussion upon sixpenny telegrams, and the desirability or otherwise of abbreviated addresses, brings out some curious statistics in the history of the seed trade. We find upon scrutiny that amongst our 48,500 customers we can only muster 851 Smiths against Messrs. Sutton's 1060; but when we come to the Browns we are brought to the front with a total of 503 against Messrs. Sutton's 450, and we can 'throw in' 205 Robinsons. We must leave some wiser head than ours to account for the peculiarities of these statistics."

— SINCE ORANGES have been so largely cultivated in Algeria the quantity of that fruit landed at Marseilles has increased to a wonderful extent. Fifty years ago the total quantity of Oranges imported into France was 7850 tons, of which 2300 tons were landed at Marseilles, nearly the whole of the fruit coming from Spain. In 1856 the imports had risen to 16,000 tons, of which 10,000 tons came through Marseilles. Ten years later, in 1866, the imports reached 26,000 tons, but only 9000 tons came through Marseilles, as the opening of railway communication between France and Spain had quite altered the conditions of the trade. But since then the cultivation of the Orange in Algeria has caused the trade in that fruit to revive at Marseilles, and out of the 55,000 tons of Oranges imported into France last year, 13,000 tons came through Marseilles, of which quantity 6500 tons were from Spain, 4800 tons from Algeria, 1160 tons from Italy, and the rest from Turkey, Greece, &c. Fifty years ago only eight tons of Oranges were exported from Algeria to France, but this total has gradually risen to 380 tons in 1856, 1000 tons in 1866, and 5000 tons last year. It may be added that the total value of the Oranges imported into France last year was £520,000, and of this total £160,000 represents the trade in that fruit done at Marseilles.

— IN the notice of the Jamaica public gardens elsewhere referred to, Mr. Morris mentions some curious SUPERSTITIONS RESPECTING PLANTS among the negroes. The plantation labourers believe that if they take up the Horse Plaintain suckers—i.e., those with long fingers, and then take up one of the maiden Plaintains, with the short fingers, while the gum or juice is still fresh upon their cutlasses, and they use the same cutlass, the maiden Plaintains will produce Horse Plaintains, and this was said by them to be a matter of common experience. It is believed also to be unlucky to point the finger when speaking of any growing plant in a provision ground, or even to name one which has recently been planted. It is stated even by intelligent Europeans that if the seed of the Shaddock (*Citrus decumana*) is planted, there is but one in a whole Shaddock that will produce good and pleasant fruit; and also that there are fifty-two seeds in a Shaddock, only two of which produce the real Shaddock, while the others produce a variety of fruits, such as the Sweet Lime, Forbidden Fruit, Grape Fruit, Chester Fruit, and Orange!

PENTSTEMONS.

FEW border plants have been so much improved and become so widely popular during the last few years as these, and those who have seen the splendid effect produced by them at Battersea Park will undoubtedly have been induced to cultivate them. They are hardy in growth and remarkably floriferous, having flowers large in size and varied in colour, and all deserve a place in the mixed border. For the centre of large beds or as a back line in the ribbon border they are very effective.

They flourish in any good garden soil, but a rich sandy loam is most suitable for them, in which, when established, they will continue throwing

up large spikes of bloom until late in the autumn. They are propagated either by seeds or cuttings, but the latter is the plan to adopt when separate colours are required. Cuttings can be struck at any time of the year, but about the end of August is most suitable. Plants struck at this time will produce strong plants for bedding in spring. Young shoots from the main stem of the plant are most suitable for this purpose. The softer the wood the more readily do they root. They should be inserted in pots filled with light sandy soil, and placed in a cold frame, which must be kept closed and shaded from the sun until rooted. When this has taken place admit plenty of air so as to harden them for the winter.

Plants that have stood thoroughly exposed through the summer will often live through the winter unprotected, but it will be found the wiser plan to take cuttings as indicated above, or to pot some of the old plants and place them in a gentle heat, when they will furnish plenty of cuttings, which, if taken early, will make good plants by bedding-out time. They are easily raised from seed, which should be sown early in spring in shallow boxes or seed pans placed in a gentle heat, where the seed will soon germinate. When the seedlings are large enough prick them into other boxes, and return into heat, where they will soon make strong plants.—A. ANDERSON, *Lea Wood*.

NOTES ON STRAWBERRIES.

MANY years ago I saw at Welbeck, Notts, in the second week in March, a row of ripe Strawberries about 30 yards long. It was a pretty sight, as all the fruits—about seven on each plant—were ripe and of even size, which proved that they must have set well and rapidly. There is considerable advantage in having all the fruits in the same stage of development, as they can be more favourably treated than when some are ripe and the others half swelled on the same plant, as we frequently see them. If we apply liquid manure to Strawberries when colouring we impair the flavour, and if we withhold it from those swelling we diminish their size. Mr. Tillery, who was gardener at Welbeck at the time, informed me that the variety was Prince of Wales, which, strange to say, I have no recollection of seeing or hearing of since. This has induced me to relate the circumstance in the hope that some of your readers may know the variety. My impression is that the fruit was not quite so large as a full-sized Keens' Seedling, but, unlike that variety, there was not a number of small ones on the plants.

Mr. Inglis states at page 269 that the temperature for Strawberries in flower should not exceed 50° at night, and this is acknowledged by most gardeners as the maximum. I have, however, proved that a variation of 5° or 10° of temperature is not of such importance as the state of the atmosphere, and some of our earliest Strawberries this season were subject to a temperature of 65° at night. We commenced gathering from that batch on the 3rd of March, the varieties being Keens' Seedling and La Grosse Sucrée. Anticipating a demand for three dishes of three-quarters of a pound each for the last week in that month, I was anxious to have President and Sir J. Paxton ready, and as soon as a few flowers were fully expanded the plants were moved to a temperature of 65° to 70° at night. They soon set, and were ready almost to a day; had they been two days later their value would have been lost. Vicomtesse Hericart de Thury has been a favourite of mine for early forcing on account of its free setting and the brightness of the fruits. Last year many of the plants failed to flower, so only a few were grown this season, and if anything they were worse still, whilst the failures in Keen's Seedling and La Grosse Sucrée would not be 10 per cent. We have no difficulty in setting them if we only can get the flowers up.

I am like Mr. Inglis respecting the presence of Strawberries in vineries. They create no terror in my breast provided we can confine them to those structures from the start to the finish. We annually pass 800 pots of them through our vineries without being troubled much with red spider. Plenty of water at the root, the moist atmosphere of a vinery, and the free use of the syringe are inimical to red spider.—W. P. R.

IN THE GARDEN.

THE SHELLED SLUG (*Testacella haliotideia*).—This curious and interesting creature is resuming activity; I recently saw some fine examples of it early in the morning. The majority of gardeners are unacquainted with it, and young men should have its value impressed upon them, for without doubt it is most serviceable in the garden, living entirely upon worms. Without close investigation it is so liable to get killed, but the small shell upon the tail should save it from such an end. It is considered comparatively scarce, but this is due I think to the fact that it travels by night and retires beneath the surface early in the morning, thus escaping the attention of the majority of mollusca collectors. I have found it in several counties, varying considerably in size and colour. The typical form is undoubtedly rare, but two of the varieties are rather common. These few remarks are penned to reach through the Journal a wide circle of readers, with the hope that due respect will be paid to my friend the *Testacella*.

DAFFODILS.—These charming plants are again unfolding to us their beauties. The first that expanded with me was Barr's or Parkinson's pallidus præcox, a lovely form of our common wild Daffodil; *N. pseudo-Narcissus* (the perianth and trumpet opens a rich sulphur, fading to nearly white); next in order was *N. minimus*,

a tiny gem, nodding its trumpet to the earth, braving the shrivelling winds of February and March with impunity. It is never more than tiny in comparison to the big trumpets, but it varies in size under different conditions; for example, the flowers upon a tuft planted nearly three years since are appreciably larger than those upon bulbs put in last autumn, yet I am sure they are both *N. minimus*, gradually advancing to the true *N. minor*. Then came the Tenby Daffodil (*N. obvallaris*), with its beautifully formed golden yellow flower, the trumpet being much longer than the perianth divisions. I cannot regard this as a self-coloured flower, for the outer divisions are decidedly paler than the trumpet. This is one of the best varieties for general planting, as it comes in very early, and is so useful for cutting. Following these is *N. princeps* from Ireland, elegant in form and colouring, with its long rather slender trumpet of a deep yellow, and sulphur perianth segments. Double varieties, which are usually named forms of *N. Telamonius*, are also in flower, but to me these double Daffodils are in great confusion. If that usually known as Double *Telamonius* is really a duplex form of that variety why is it so much earlier in flowering than its single progenitor? I will say no more of double Daffodils now, or I may get mixed, as many of my confrères are, I fear; nevertheless, the outcome will, I trust, be advantageous to all; it is a most interesting subject. *N. nanus* is also in flower, the trumpet deep yellow, the perianth divisions pale sulphur, varying much in width, but always pale-coloured, at once a distinguishing mark from minor, but for which in many cases it is sent. One batch now flowering was sent to me as *N. minor*; this is much to be regretted. All bulbs should be proven by our large dealers before they are sent out unless they are received from an undoubted authority.

I will end my notes upon Daffodils by saying that *N. moschatus* is just expanding, or it may be *N. cernuus*, for I confess to my inability to distinguish between most of the white Daffodils. In looking through Loudon's "Hortus Britannicus" I came upon an interesting note (page 650) anent this variety. It is an extract from a letter received by Loudon from Rev. T. W. Bree, Allesley Rectory, near Coventry. It says: "*N. moschatus* has been found wild in the adjoining parish of Meriden, and communicated to me by its discoverer Miss Gresley of that place. It is quite a new plant to the British flora I believe, and you may announce it as such if you like. Poor Haworth would have jumped for joy at the intelligence had he still been among us." Of course this find was only an escape from some garden, or the place where it was found might at some time have been a garden. I should be glad if some reader in the neighbourhood can tell us whether *N. moschatus* still occurs there in a semi-wild condition. I anticipate the answer.

DOUBLE FLOWERS.—Referring to the cause of this in Daffodils one is much perplexed, especially considering the only available evidence forthcoming. Morphological study may assist us in arriving at a conclusion, but I doubt its value very much. There is plenty of work for those who wish. At this juncture it may be interesting to quote some remarks made by John Evelyn in his "Gardener's Almanac," published 1691. At page 41 he says, "Let gentlemen and ladies who are curious trust little by manganisme, insuccations, or medicine to alter the species, or indeed the forms and shapes of flowers considerably—that is, to render that double which Nature produces but single, &c., but by frequent transplanting, removing, enriching the mould to multiply and double, and by starving and hardening the earth and consequently taking from the roote the freer nourishment for variation and change. Make much of this document." I will ask the reader to digest Evelyn's advice.

PUSCHKINIA SCILLOIDES.—A little gem now in flower, quite unprotected. Each blossom is about three-quarters of an inch across, with a French white ground colour. Each intended division of the perianth has a blue line, thus forming a pretty contrast. *P. libanotica* is a strong-growing variety, bearing more flowers on the spikes, and the lines on the perianth are greenish blue, but there is not enough difference to enable it to stand in specific rank. They should both be planted in a well-drained sunny position, so that the bulbs are kept warm and free from stagnant moisture, or they will certainly rot. A riddle suggests itself. May not *Chionodoxa Luciliae* be the offspring of this plant and *Scilla bifolia*?

SNOW GLORY (*Chionodoxa Luciliae*).—I am more than ever struck with the modest loveliness of this harbinger of spring. Bulbs which have now been planted three seasons are aglow, strong racemes being produced, with from ten to thirteen flowers upon each; and as the bulbs were thickly planted they are especially appreciated, because a good mass of colour greets us regardless of sunless days and biting winds. How it varies in size, colour, and form—it is by no means in a complete condition—some are very pale, small, with narrow segments, while others are large, brilliant blue, with pure white centres; others again as near self as can be, usually of a porcelain blue. In its best form I should never like to be without it.

MUSCARI LINGULATA.—This has been one of my garden delights

for six weeks. It commenced to expand its small flowers early in February. I took the precaution to cover with a bellglass, and they have maintained their beauty up to the present time (March 24th). Each bulb produced three spikes of flowers, which are being succeeded with a good batch of seed. The perianth is of rich cærulean blue, with deeper midribs leading to the limb segments; it is indeed a gem, apparently quite hardy and very early, vieing with Elwes's Snowdrop and the Netted Iris, a trio of beauties which should find a congenial home in every garden where hardy bulbs are hobbled.

LEONTICE ALBERTI.—Under a small handlight this flowered well, the racemes being now succeeded by the lobate sub-glaucous foliage. The flowers are orange-yellow, borne in dense racemes about 6 inches high, but I do not think it will prove hardy in most gardens; nevertheless, it is well worth taking care of. Thorough drainage, light rich soil, with a sunny position, are requirements which must be met if its culture is seriously attempted.

COLCHICUM MONTANUM.—This is appearing now as if out of sheer contempt at its congeners, is interesting and welcome. The flowers are white tinged with purple, the leaves contemporaneous with them. *Merendera sobolifera*, a similar little plant, but much smaller, of the same colour; the perianth segments are longer and not so wide, while there is a great difference in the rootstocks.—T.

HORTICULTURAL DEPRESSION.

WE very often hear of agricultural depression, and the farmers are never tired of invoking the sympathy and seeking the aid of Government in these evil times; but the gardening world is, though not considered so important, and, consequently, is less heard about than the agricultural community, suffering from severe depression too. Whether such depression will be lasting or not it is hard to tell. One thing seems pretty certain, and that is, that our landed proprietors will not have such large incomes from their estates in the future as they have had in the past, unless, indeed, some new and at present unknown source of wealth springs up for them. At the present time, looking at things as they are, and as they appear likely to be, gardening seems bound to suffer by these evil times. Gentlemen who may have heavily encumbered estates, and who have had to give large reductions to their tenants, cannot be expected to be able to afford themselves the amount of indulgence in horticulture that they have been in the habit of doing in times past. Retrenchment, therefore, is the order of the day, and many fine places are being reduced in a manner that is much to be regretted, but which, at the same time, seems unavoidable.

True, other gentlemen—our merchant princes, and great numbers of less prominent, yet still wealthy, men of commerce in our country—are, in a greater or less degree, patrons of horticulture, and our general commerce may again be as prosperous as ever it was. This, therefore, is the main hope for the future flourishing of horticulture.

That it should flourish is, no doubt, the ardent wish of all your readers, and it should be the desire of all who love the beauties of the world of plant life, who can appreciate the qualities of fresh and luscious fruits, and the more prosaic, yet still valuable, qualities of vegetables, that horticulture should flourish in all its departments; and this, be it observed, not only in regard to the spread of the appreciation for gardening as a means of pleasure and a source of elevating and refining study, but also the great increase of gardening as connected with the abundant supply of good fresh fruits and vegetables to the masses.

Looked at from every point of view, then, it will be well for the country if horticulture flourishes in years to come. While all must regret the sweeping reductions rendered necessary in some gardens, such must be looked at in a philosophic light, and, in fact, we must bow to the inevitable. There can be no doubt that there are too many young men at present connected with gardening as intending gentlemen's gardeners. Many of them must, I fear, content themselves with hopes of getting a good place. For one who does get into such a place as is considered good, there are many who are forced to toil on with hope deferred. Most of the prominent nurserymen have great numbers of names on their books of men waiting for places, many of them advanced in years; men who have had large and varied experience, who are able gardeners, educated, and gentlemanly. Of course there are also numbers aspiring to places who are not so experienced, not so well educated, or so gentlemanly. Still, taken as a class, gardeners may be considered a highly creditable body of men.

No doubt in time the old rule of demand and supply will have had an effect in reducing the numbers of young men who take to gardening to something more in proportion to the chances of their all becoming head gardeners. More men who are simply labourers should be employed in much that goes on in gardens; if such were done the gardening world would not be overstocked with disappointed men who began life with the hope of getting to some position, but who are compelled by sheer competition to submit to hard lines, and never rise above a working gardener, doing much severe and unskilled labour, toiling on, and discovering when too late that their youthful vision has been a delusion and a snare. Such is a gloomy picture to look upon, but unfortunately it is too true.

In some cases of course the non-success rests entirely with themselves, but in many others, though deserving of success, they have not been able to command it. A young man commencing gardening now has many advantages which were not possessed by the horticultural students of half a century back. Travelling is now so easy and cheap that little excuse

can be offered for the non-visitation of other gardens, and the attendance at a flower show now and then. Gardening literature is both cheap, good, and abundant, and within the reach of all who care to read up in their profession. Gentlemen have sometimes been discouraged in their gardening pursuits by the want of skill and tact of their gardeners; when such is the case it constitutes a distinct blow to the progress of horticulture, and is much to be regretted. I have heard both ladies and gentlemen remark, "Oh, I would much like to grow so-and-so, but my gardener does not care for it!" or "Oh, I wish I could get my gardener to go in for so-and-so, but he says it won't do in our houses!"

I would advise all young men entering the gardening profession to remember that they have to serve. Not exactly as they wish can they get all things done. They may advise when their experience enables them to do so, but refusal to carry out their employers' wishes should not be for one moment thought of. If such a rule were strictly followed the effect would be beneficial to gardening and gardeners. A reasonable employer, finding his wishes carried out to the letter, and observing now and then that something his gardener remarked on—when being asked to carry out, as being unlikely to succeed, yet at the same time never refusing to comply with the request—has not turned out as he expected, but as the gardener hinted, will in future be more inclined to trust his gardener's judgment and value his skill.

Despite the term of dull and disheartening years which we are passing through, there may be brighter days in store for horticulture. One thing is especially to be desired, and that is that gardeners may more and more come to see that *suaviter in modo* is very necessary, as well as experience and ability. Young men, remember the road to fame in the horticultural world is hard to travel, and comparatively few reach the highest pinnacles, but a moderate amount of success may be obtained by patient study, hard work, and a gentlemanly, obliging, and courteous demeanour. The love of horticulture must ever be considered beneficial. May it increase, may it flourish in time to come as it has done in the palmiest days of the past.—S.

TRENCHING GROUND.

MY opponents must not flatter themselves that their arguments in favour of trenching are unanswerable. On the contrary, I should be pleased to follow up the subject, only I think more will be gained by postponing the controversy. We all like novelty, and "Trenching Ground" has gone on long enough; in fact the season for trenching is past. However, I find there are several practical gardeners, who, to a certain extent, favour my views, and now I have set men thinking, more will eventually be gained over. Once intelligent men have their faith in trenching somewhat shaken, they will gradually discover that the benefits attending that laborious operation have in many cases been much overestimated. One friend writes, "I wish some of them" (meaning "A Thinker," and others of his persuasion) "had to deal with our land, and we should hear but little about trenching from them." Another says, "Stick to it; you are right on the whole, and right will eventually prevail over might." Other somewhat similar remarks might be given, only I am not so fond of quotations as some people are.

I do not, however, propose to let our facetious and would-be "smashing" friend "A Thinker" off so lightly, simply because he has not met the case so fairly as the rest. It will be remembered he has twice mentioned Mr. Gilbert and his achievements at Burghley as being illustrious examples of the advantages attending trenching. On page 66 he writes, "Mr. Gilbert has the reputation of being an expert cultivator and the garden in his charge is, I believe, made to yield extraordinary crops," and then confidently guesses that if it was not worked 2 feet deep it would not be anything like so profitable as it is to-day. According to Mr. Gilbert's own showing (page 246) the Burghley Gardens are indeed surprisingly productive, no less than eight large establishments being supplied from it this winter. Yet we find Mr. Gilbert "agreeing with nearly all I say," and he now considers trenching so much labour wasted. "A Thinker" has invoked a powerful witness against himself. It appears Mr. Gilbert objects to being considered a "surface scratcher," and as he has rendered me good service, we will charitably suppose that his "cultivators" more than "tickle" the surface. I did not attempt to make Mr. Gilbert's practice appear ridiculous, quite the reverse.

"A Thinker" makes an unfair use of the statistics with regard to the unoccupied farms in Essex. He must know as well as I do that the land in the majority of cases is of a heavy unworkable nature, only fit for corn-growing, and to trench or break it up deeply with the steam plough would make it ten times worse. It is bad seasons (wet ones, remember) and low prices that has brought about this unfortunate state of affairs. Can anyone point to an unoccupied farm in Essex within carting distance of Spitalfields Market?

Who besides "A Thinker," who, I am beginning to perceive, does not think enough, would think of placing a Vine border with its concrete bottom, perfect drainage, and partial aëration, in the same category as an ordinary orchard or fruit border? Even with a Vine border experts endeavour to keep the roots near the surface, and it is of still greater importance that Apple, Pear, Peach, and other fruit trees should also be kept rooting near the surface. Then, again, do I advocate planting orchard and other trees in small holes dug in grass land? They are bound to thrive best in cultivated, but not necessarily trenched land, as I took pains to point out. Mr. Whitehead's trenching or subsoiling with a plough is very different to the practice advocated by Mr. Temple and others, of trenching three spades deep. Surface culture and "starvation systems"

are not analogous. In conclusion let me advise "A Thinker" not to draw so freely on his imagination.—W. IGGULDEN.

IN my remarks upon the above subject it is not my intention to enter into any particular criticism of the different statements advanced for or against the matter, but I merely wish to mention the ideas derived from my own experience. In the first place, I am of the same opinion as Mr. Iggulden's friend who wrote to him saying that he was both right and wrong. I think he is right if he still holds to the opinion that trenching is overdone, because I have often noticed that trenching for different crops is done when there is no need for it, especially when the ground had been deeply worked for a previous crop; and it is not uncommon to hear the remark made that such and such a crop ought to do well, for the ground has been well trenched for it, when most likely it would have answered better had trenching not been done at all. But I think that Mr. Iggulden is wrong if he wishes it to be understood that trenching could or ought to be dispensed with altogether, and instead take up a system of a spit-deep cultivation combined with surface mulching. This system would not, I fear, meet with the concurrence of most cultivators, and I think the labour and attention required would entail as much or more time than that of trenching the soil.

Gardens are in many instances so peculiarly situated that the materials for adding stability to the soil, and for that of mulching and watering also, would be most difficult to obtain, and I am afraid in many cases could not be obtained. I do not think it possible for anyone to sit at home and write an article to suit everyone's position and wants, and the subject advanced by Mr. Iggulden being an important one, much good is, no doubt, gained by its discussion.

More than twenty years ago I took charge of a garden which was comparatively new so far as regards the kitchen garden. The soil was of a very heavy nature, neither loam nor clay, and such an absence of stone, which allowed the soil if it was long unmoved to become so consolidated as to be almost unworkable with any ordinary garden tool. This garden had been previously trenched, and I proved on examination that the best soil had been turned in 2 feet or more in depth, and there it was, to my thinking, useless. Instead of having a workable soil that could grow what was required, and improve the under soil by degrees when it could have been gradually mixed with the other, it remained one of the worst soils to cultivate that I ever met with. Here, then, in my opinion, was a great mistake in trenching the ground. Perhaps some may say, Why not re-trench the ground? but that is easier said than done, and in that case at that time it could not be done. I had so far made up my mind that it was wrong to do as mostly is done—that is, as soon as a piece of ground is enclosed for a garden, after draining is done to go into trenching without a great deal of consideration, because it may be best let alone, for a time at least.

I have now to relate quite a different case, for after some time I was called upon to lay out a kitchen garden of seven acres in another county. The field chosen had carried a crop of Lucerne for three years, and most of us know what a deep-rooting plant it is, some of them going down quite 3 feet. After the operation of clearing the surface, draining the enclosure was the next work, and on planning for them and examining the subsoil I found that of 2 feet in depth was of a loamy nature, while the top was composed largely of gravel. After a little thought I decided it would be an advantage in this case to trench the whole of it before anything else was done, adding 500 loads of manure and any other suitable soil I could find, and after lying the whole winter it was one of the best working soils that I have had to deal with. So I considered that in one instance one garden was completely spoiled for years by trenching, while the other was materially improved by the operation.

In my present place I dare not trench the ground, for about 18 inches below the surface is a thick stratum of solid chalk; therefore I am compelled to follow more after the plan Mr. Iggulden advocates by attending to mulching, watering, &c. Peaches and Cherries will not thrive here for any length of time, but Plums, Apples, Pears, and Gooseberries do well if not allowed to root into the chalk. A neighbour's garden about half a mile off has to be trenched every year. That arises from the fact that the garden is bounded by a row of Elms, Horse Chestnut and Ash trees, and there being no wall the roots of the trees in one season take possession of the soil to the injury of the crops, there being no walls or other means used to stop the encroachment.

Mr. Iggulden deserves our thanks for introducing the subject, and it will no doubt cause many to think before they act. But the question is asked, "What has made our gardens so productive and raised them to such a high standard of excellence?" We must answer that deep cultivation has had most to do with it.—THOMAS RECORD.

As bearing on the subject of deepening the soil for fruit trees, which some persons appear to think so useless if not prejudicial, the remarks of Mr. John Watkins, of the Pomona Farm, Withington, in an excellent paper read at the last meeting of the Herefordshire Chamber of Agriculture, appear worthy of attention.

Alluding to the increased importation of American Apples, Mr. Watkins said the transatlantic growers do not beat us in the same way that they do with cattle and sheep by underselling us, but by sending better samples that command a higher price than the comparatively inferior produce of English orchards, which by better culture ought to be of vastly superior quality. Mr. Watkins instanced an orchard of Apples, giving a profit of £16 per acre three years after planting; a better selection of varieties and a more generous system of culture were strongly advocated.

In preparing for planting on tillage, Mr. Watkins said the ground should be steam-cultivated, and subsoiled if possible; if on grass large holes should be made not less than 3 feet 6 inches square, moving the soil to not less than 30 inches deep, and filling with the old turf and top soil, placing fine amongst the roots, but not burying them deeply, staking securely and mulching the ground with manure.

That is the teaching of a practical man with the best opportunities for forming a sound judgment on the subject. He knows very well our great bulk of inferior fruit that can scarcely be sold at any price is the produce of trees in thin ill-prepared soil, while the fruit that pays because of its higher quality shows the advantage of deeper culture. When one of the largest Kentish growers was down here he expressed his astonishment that the land was not better prepared by breaking it up to a good depth. The magnificent fruit he exhibited was, he said, the result of trenching the ground, merely digging it with the spade being quite inadequate. I have seen no American fruit to equal the samples referred to, and they taught us a lesson we are not likely to forget.—A GROWER.

TWO PRETTY HEATHS.

IT has been written of the amateur plant-growers that they "do not care for Heaths," but our experience and observation directly contradict such an assertion, for we never heard this remark from either sex. True



Fig. 55.—*Erica Banksiana alba*.

many have been deterred from entering upon their cultivation by the bugbear which is always thrown around these beautiful plants by many professional gardeners, who tell their amateur friends, with such a profound look and mysterious shake of the head, that *Ericas* are so very difficult to grow and they will never succeed, but we would urge our amateur plant lovers to try them. We acknowledge and know full well there are difficulties attending their management, and so there are with all other plants more or less; but there is no secret about the growing of Heaths that cannot be mastered; and for general directions we should say, Drain your pots thoroughly, pot firmly in good sweet peat soil, do not add too much sand as it only impoverishes the soil, do not overpot, water freely but judiciously, keep a free and dry atmosphere about the plants, and should mildew show itself immediately apply the remedy we have already given. Plants treated in this manner will, however, not suffer much, if any, from this disease. Other and minor details in their management will suggest themselves to those cultivators who look upon the attention their pets require as a labour of love, and their care will be rewarded by a rich return of beautiful flowers, which last long in full beauty, and the like of which is not to be obtained from any other genus of plants.

The well-known *E. hyemalis*, *E. autumnalis*, *E. melanthera*, *E. Wilmoreana*, and a few others are free, useful, and generally grown, but there are numbers of others too seldom seen in gardens. Two of these neglected beauties are those represented in figs. 55 and 56. *Erica Banksiana alba* has elegant drooping white flowers in small clusters at the points of

the branches, and is dwarf in habit; *E. buccinæformis* being rather closer in habit, equally free, and with bright rosy red tubular flowers. Both are well worthy of a place in the garden.—G. T.

THE CULTIVATION OF THE VINE.

[An essay read before the Liverpool Horticultural Society by Mr. Smith, Waterdale Gardens, St. Helens.]

TREATISES on the cultivation of the Vine are so numerous that a paper on the subject might be considered uninteresting, but the position the Grape occupies amongst fruits is so commanding that information pertaining to it is ever welcome, especially to young gardeners, and I will therefore describe the method of culture I have practised with success over a quarter of a century.

In the choice of a site for vineries extremes should be avoided. A low damp position where the water cannot be drained off properly is ruinous to Vine roots, while an elevated site, where the subsoil is sand or gravel, and the Vines suffer from drought, is more favourable to the production of red spider than fine Grapes. A suitable site is one open to the south, and well sheltered from north and east winds. The form of a vinery is a matter of taste, as any will answer provided it is light and well ventilated. For early forcing a lean-to is preferable, as it presents the whole of the surface of the glass to the south and gains all the heat of the sun, which is a great advantage in maintaining a genial temperature. The wires should be stretched the length of the vinery 10 inches apart and 18 inches from the glass, as vigorous shoots are apt to get chilled by coming in contact with it before they can be safely tied down. The heating power must be liberal, so that a suitable temperature can be maintained without overheating the pipes. The means of ventilation must be ample at the top and in front. Where Vines are forced to have ripe Grapes in the beginning of April every means must be used to keep the foliage green and healthy as long as possible, and to prevent a second growth during August and September.

In making Vine borders the first consideration is the drainage, for however great the care may be good results cannot be obtained if the roots made in summer are destroyed in winter owing to bad drainage. It is not often that Vines derive any benefit from the subsoil, and it is cheapest in the end to make a good concrete bottom, allowing a decline of 2 inches or so in a yard from the back to the front of the border. Allow this to become quite dry before the drainage is placed on, and lay rows of 2-inch drain tiles across the border 6 or 7 feet apart. The ordinary material must be carefully placed between the tiles, finishing at the top with a finer material. A main drain must run parallel with the border a few inches below the concrete.

The soil should be of a durable character, not too open or too retentive. Always avoid rank manure, as it produces soft long-jointed wood, and is liable to generate fungus in the border and shanking in the fruit. A strong fibrous loam cut about 3 inches deep from an old pasture, preferably of a calcareous nature, is the best. First cut off any long grass, then raise the turf and chop it up at once, if in dry workable condition. When put together green a gentle heat is produced, which is beneficial to root-growth, giving strength and vigour to newly planted Vines. In many places fibrous loam is difficult to procure, but fair Grapes may be grown in any ordinary good soil, free from fungus, mixed with broken refuse—bricks, a few half-inch bones, and with a surface dressing of good manure.

It is a mistake to make the whole width of border first, as a great part of it must be unoccupied with roots for a considerable time while the fibre is decomposing to no purpose. In making it by instalments every addition throws fresh vigour into the Vines, and if strength is not produced while the Vines are young it cannot be gained afterwards. Waste bricks broken fine may be mixed in freely according to the retentive character of the soil, as these not only act as drainage, but the roots like them. Some rubbish is employed to a great extent in many borders, the water passing through so quickly that the roots are dry half their time, when the foliage is soon infested with insects. It is not the production of roots that makes the Vines strong; it is keeping them healthy afterwards. Manures should always be applied on the surface, the rains conveying the essential parts to the roots by degrees as required. The exhausted material must all be carefully removed before putting on a fresh covering, as it is liable to generate fungus, which soon takes possession of the border. It is an advantage to have the border both inside and outside, the front wall being arched, as when the border requires renewing either the inside or the outside can be renewed without affecting the crop, provided it is done at the right time—that is, as soon as the wood is thoroughly ripe and the fruit all cut. Assisted by green foliage and a close moist atmosphere, the roots are soon in active growth, plumping the buds and making all right for the future crop.

The site being formed and the drainage complete fresh cut sods, the grass side down, should be laid as far as it is intended to make the border—namely, 5 feet outside and 5 feet inside, with the archway making 11 feet. Beat it down firmly with the back of a four-pronged fork to the depth of 3 feet, declining to the front. If the turf is fibrous it cannot be made too solid, as the character of the border is more uniform and less water is required. Too much water soon exhausts the soil, and allowing it to become dust dry has the same effect. An addition of 3 feet should be made every year until the border is completed.

The time for planting Vines varies according to circumstances. For well grown and thoroughly ripened one-year-old Vines kept in a cold house the middle of March is a good time. In planting keep the base of the stem well up to allow room for top-dressing. Each root should be

stretched out full length on the surface of the border, covering with finely chopped turf and a few half-inch bones to the depth of 3 or 4 inches. Place a stake from the soil to the wire to train the young growth straight; give sufficient tepid water to settle the soil about the roots, and cover with a few inches depth of half-decayed manure to prevent evaporation.

Planting being completed, the chief object is to secure well-ripened wood, as the future productions depend on this. Keep the vinery close and moist, having as little fire heat as possible, according to the weather outside, until the growth begins. Raise the temperature with sufficient ventilation in front to keep the air in motion, as it is a mistake to allow the heat to pass out at the top ventilators to be kept up by the hot-water pipes. When the sun has full power ventilate early and close early, and by the time the temperature is 80° have the pipes warm enough to keep it at that degree till sunset, when it may be gradually lowered for the night. Continue the same treatment until the growth is completed, when the atmosphere may be drier and ventilation more liberal. Allow the laterals to grow freely; if any take a lead pinch out the points, keep the shoots equally balanced, and tie the leader to the wires as it advances. Allow every inch of the roof to be covered with good foliage, but prevent crowding. As soon as the leaves have fallen shorten the canes to the base of the rafters. When the wounds are dried rub a little painter's knotting over them, as young Vines are liable to bleed; cover the outside borders with litter and wooden shutters to protect the roots from frost and snow, and see that the inside border does not become dust dry.

The time for starting Vines into growth must be determined by the



Fig. 56.—*Erica buccinæformis*.

time it is intended to have the fruit ripe. If for late Grapes allow them to break without fire heat, which they generally do about the end of April. If intended for early fruiting close the vinery the first week in February, bringing them on quietly until all the buds are started with a little fire heat. When fairly growing treat them like the previous season. When the leading shoot is half up the rafter pinch out the centre, also the lateral from the top bud, allowing the others to grow until the leading bud breaks again, when the laterals may be pinched to three or four leaves; this plumps the buds at the lower end of the Vine, which are to bear fruit next season. Allow the new leader to grow to the end of the rafter, then stop it, which causes the rod to thicken and the buds to swell. Allow the laterals to grow freely, as it encourages root-action, at the same time give a liberal supply of water to the borders, for young Vines can scarcely have too much if the drainage is perfect. As the wood commences ripening ventilate more freely and provide less moisture, reducing the laterals to one leaf on the fruiting part, which plumps the buds.

We have now arrived at the third, or fruiting season. Considerable latitude must be allowed regarding temperature, as the cultivator must be guided by circumstances and conditions of the weather. Start the Vines gently as before until the bunches begin showing, when the temperature may gradually be raised to 70° or 80° in the day with sun heat, and 60° to 65° in the night, in accordance with the character of the weather outside. Ventilate a little at the front when favourable, as it keeps the air in motion and promotes healthy growth. Always avoid high night temperature or exciting influences in the absence of light. I have repeatedly had Muscats when in full bloom in a temperature as low as 55° in the night, yet they set as freely as Black Hamburgs. This is lower than I should recommend, but at the same time I consider rest in the night favourable to the fertilisation of the fruit, which swells more freely, and finishes more satisfactorily. As the Vines come into bloom damping in the morning may be dispensed with until about ten o'clock, then give each Vine a

sharp tap with the hand on the main stem to disperse the pollen, and if the weather will permit close the ventilators and damp every available surface to produce a genial atmosphere. On dark cold days keep the temperature low with less moisture, and make up the loss on bright days by raising the temperature to 85° or 90° with sun heat. Treated in this way the wood is short-jointed and the foliage clean with plenty of substance, the two chief features in producing good fruit and preparing the Vines for the future crop. Never syringe the Vines after the buds have started however clear the water may be; it damages the bloom on the fruit, which is so highly appreciated, and is no benefit to the foliage. Evaporating troughs on hot-water pipes may be dispensed with, as the cool moisture from the floor is better for the foliage.

Disbudding must be carefully attended to as the Vines make progress, keeping them regularly and evenly balanced by pinching in the strongest growths and encouraging the weakest. Allow every leaf room to perform its functions. A smaller number of well-developed leaves is more beneficial to the Vine than a large number in a crowded state. Be careful in tying down strong growths, as they are liable to break from the main stem. As soon as the bunches show their character remove all off that are not required except in shy-setting sorts, which should remain until after they are set. Allow the berries to get a fair size, so that it can easily be seen which are taking the lead. Take a light wooden peg in the left hand, and a pair of clean sharp Grape scissors in the right; begin at the bottom of the bunch and work to the top, easing the shoulders with the peg, thinning all the small and innermost berries. Be careful not to rub them with either the peg or the scissors. Discretion must be used in thinning to allow room for every berry to swell freely, and sufficient be left to form a compact bunch when finished, as nothing looks worse than a bunch spreading all over the dessert dish.

As the Grapes commence the second swelling give the inside border a thorough watering with weak liquid manure at 70° to 80°. If early Vines, continue the same treatment until the Grapes are half coloured, then gradually reduce the moisture and ventilate more freely until the Grapes are ripe, when plenty of ventilation and as little fire heat as possible is all that is required to keep the fruit in good condition. When Grapes are colouring it is an erroneous practice to open the ventilators and withhold moisture both from the atmosphere and the borders. This is done with a view of producing better colour, better bloom, and better flavour, but, as a rule, is more productive of red spider, red Grapes, and red foliage. I can speak with confidence on this point, as I have cut tons of Grapes well finished in every respect by continuing the same treatment till the Grapes are ready to cut. If the borders are properly drained and the Vines in good health, they can scarcely have too much water at the roots from the time they commence the second swelling till they are half coloured. As the Vines advance in age I give a regular supply of weak liquid manure, fresh made from sheep or cow dung, after the fruit is all cut. The inside borders should never be allowed to become dust dry, as it exhausts the soil of the natural food the roots require to prepare the future crop; in fact, the production of good healthy roots and foliage, and preserving them as long as possible, is the secret of success.

AMONG THE DAHLIAS,

It seems to me that there is a decided re-action in favour of Dahlias, not merely the single varieties, but all the sections are being again extensively grown. Only a short time since it was the fashion with many growers to cultivate few or but the single sorts, the heavy taste-offending doubles being ostracised. Now the taste for the latter is being renewed again, and unless I am much mistaken they will nearly displace the much over-estimated singles. The latter, I admit, are decidedly pretty, especially when cut; but the majority are rank growers, the flowers are short-lived, and these being followed by innumerable seed pods soon render the plants unsightly. Then these flimsy blooms are bad travellers, and are of little service at the end of the season for church decoration and other somewhat similar purposes for which the doubles of all sorts are so largely used.

I was never particularly enamoured of the singles with the exception of the good old Paragon, and a late autumn visit to the Salisbury Nurseries of Messrs. Keynes, Williams & Co., completely dispelled any lingering doubts as to the comparative value of the sections in the minds of myself and, I believe, the rest of a rather large party of gardeners whom I accompanied. At this nursery the specialities are Dahlias, Roses, Verbenas, and Vines, and for all of these they are justly famed. It was the first-mentioned I went principally to inspect, the Roses at the time of my visit (late in October) being naturally long past their best, and so also would have been the Dahlias in most seasons. Several acres are devoted to them, and as there were long rows of each I could not well have a better opportunity for selecting the best among them. These selections, which were made with the assistance of Mr. Wyatt, the experienced grower, and who perhaps knows Dahlias as well as any cultivator in the country, I shall append. They may be relied upon as being among the best up to the present time, the varieties being chosen from great numbers, the raisers including Messrs. Keynes, Turner, Eckford, Rawlings, Fellowes, and Harris. Most of the sorts named are of remarkably sturdy habit, and this is especially noticeable in the numerous seedlings raised by the Messrs. Keynes, the heights in most cases ranging from 3 feet to 4 feet.

It should be added that every plant, whether the blooms are required for exhibition or otherwise, should have abundance of room to develop, as all well repay for liberal treatment. They are best grown with a single stem, and not starved in small pots in the earlier stages of growth.

Those recently struck and in small pots, or which are received from the nurseries in thumbs or 2½-inch pots, should be shifted into 5-inch or 6-inch pots, and kept growing sturdily in cold frames till near bedding-out time. At planting time the positions for them should be well enriched with solid manure, and if chopped turf can be spared some of this may well be added. Each plant should have a stout stake placed to it at once, and later on the growths should be thinned and kept properly tied up. If fine blooms are required an early thinning of the buds should also be resorted to, reserving the best-formed central ones only.

The mere fact of having a great number of varieties, or even a great number of plants of a few of the best varieties, does not render winning the premier prizes a foregone conclusion; and at Messrs. Keynes it is found necessary to spend much time in selecting the blooms with which they frequently gain high honours, and we were assured that out of the many hundreds of blooms at their disposal it is by no means an easy matter to pick out a perfect stand of twenty-four. In the classes at local shows, however, such a high standard is not so often attained, and consequently beginners need not be deterred from entering the lists of competitors. None but the best sorts should be grown by them, and as many of these as there is space for, the aim being not to have as many varieties to choose from as can be collected, but rather to have as many blooms as possible of each sort. It is better to grow a few really well than a greater number indifferently. In the subjoined lists of varieties I have not attempted to describe the whole of them, as all will be found fully described in the catalogues of Messrs. Keynes, Williams and Co., and other noted growers.

Twenty-four Show Dahlias.—Imperial, Condor, Canary, Constancy, Henry Walton, Herbert Turner, Mrs. Gladstone, Hon. Mrs. Percy Wyndham, Miss Cannell, Royal Queen, Mrs. Shirley Hibberd, Prince Bismarck, Delight, Earl Radnor, Emily Edwards, Georgiana, James Cocker, James Vick, Joseph Ashby, Lady Wimborne, Prince of Denmark, Walter H. Williams, William Rawlings, and Mrs. Stancombe.

Twenty-four Fancy Dahlias.—Alderman, Annie Pritchard, Chorister, Fanny Sturt, Flora Wyatt, Frederick Smith, Gaiety, George Barnes, Henry Glasscock, Jessie McIntosh, John Forbes, James O'Brien, Maid of Athens, Miss Browning, Mrs. Saunders, Professor Fawcett, Parrot, Rebecca, John Saunders, Madame Sonbeyre, Mandarin, Rev. J. B. M. Camm, Florence Stark, and Hercules.

Twelve Pompons.—Lady Blanche, Golden Gem, Little Prince, Rosetta, Fanny Weinar, Favourite, Isabel, Cupid, E. F. Junker, Nemesis, Guiding Star, and Royalty.

Twelve Singles.—Paragon, Acquisition, Terra Cotta, Velvet Mantle, Grandee, White Queen, Rose Circle, Aurata, Mauve Queen Improved, Negress, Defiance, and Bertha.

Twelve Dwarf Bedding Dahlias.—Crimson Gem, John Wyatt, Mont Blanc, White Bedder, George Thomson, King of Dwarfs, Scarlet Globe, Yellow Globe, John McPherson, Leah, Rising Sun, and Little Wonder.

Cactus Dahlias.—Constance, Glare of the Garden, Juarezii, Parrot, and Crimson Glare of the Garden.—W. IGGULDEN.

NATIONAL AURICULA SOCIETY.

ALLOW me to remind your readers who are interested in this Society that the Exhibition will be held on April 21st in the conservatory of the Royal Horticultural Society. Entries should be sent at once to Mr. A. F. Barron, South Kensington. Those exhibitors who bring their plants out of the pots will have pots provided to place them in, and green moss to cover the surface. It is absolutely necessary that all exhibits be placed ready for the Judges at 11 A.M.

Those who have been accustomed to exhibit seedlings will kindly take note of Rule X. in the schedule—That all plants submitted for certificates must be staged separately from the collections. It may not be generally known that there is a separate fund for seedlings, the subscribers to it according to the last published balance sheet being six persons interested in seedling-raising, the balance in hand being £7 4s. It may be well to state that it is proposed to hold a Primula conference in 1886, and the preliminary arrangements will be made on the 21st. The luncheon will take place at 2 P.M., when John T. D. Llewelyn, Esq., will preside, the subject of discussion after luncheon being the proposed conference. The Council of the Royal Horticultural Society have appointed Colonels Clarke and Beddome, the Hon. and Rev. Mr. Boscawen, Messrs. Loder, G. F. Wilson, Llewelyn, and Godman to confer with the Society. Tickets for luncheon are 3s. 6d. each, and may be obtained on application to Mr. Rolt, 170, Hartfield Road, New Wimbledon.—J. DOUGLAS, *Great Gearys, Ilford*

NOTES AT OAKHOLME, SHEFFIELD.

OAKHOLME, the residence of Thos. Wilson, Esq., a liberal patron of horticulture, is well known and justly celebrated in Sheffield and district for its beautiful and well-kept gardens and greenhouses, and especially for the high class of Orchid and general plant cultivation there practised for many years past by the skilful head gardener, Mr. Wm. Hannah.

ORCHIDS.

The cultivation of Orchids here grown is not numerically so large as that at Westbrook, Sheffield, but is second only to that in this district, and not even to that in the size, vigour, and rare quality as to varieties and the individual specimens. At the present time there is a remarkably fine display of bloom, the flower house being packed with choice examples. In the same range, and next adjoining this house on the one side, is a conservatory literally ablaze with a fine display of specimen Azaleas,

Camellias, Cinerarias, Narcissus, &c.; on the other side is the East India house, in which there is a splendid display of Phalænopses, finely flowered. In the flower house first alluded to are some very fine varieties of *Odontoglossum Alexandræ*, one especially—*O. Alexandræ grandiflora*—being a superb form, the flowers each fully 4 inches across, the sepals and petals very broad and stout, colour white suffused with rose pink, lip a most beautiful bright orange with pencillings of crimson at the base. A fine plant of the white type of *O. Alexandræ* has twenty expanded flowers of pure white in all except the lip, which is lightly coloured pale yellow. A fine plant of *O. Pescatorei* is carrying forty-eight flowers. Of *O. cirrhosum* there are numerous fine varieties; there are also flowering plants of *O. Halli*, *O. gloriosum*, *O. nebulosum*, *O. luteo-purpureum*, *O. cordatum* (this plant, which is now carrying two good spikes of bloom, has been in bloom continuously since September last). Of *O. citrosimum* there are numbers of plants flowering profusely. They are grown the year round on a cool, elevated, and somewhat dry shelf in the flower house, the comparatively dry air of which suits it well. A large plant of *Pilumna fragrans* is now producing its second crop of flower spikes immediately the first lot, which numbered fully two dozen, are over. Of *Trichopilia suavis* there is a very finely coloured variety, carrying four flower spikes with four flowers on each.

Of Dendrobes, there are numerous varieties in flower. Especially fine are *D. primulinum giganteum*, *D. Wardianum*, *D. crassinode Barberianum*, and *D. heterocarpum philippinense*, the latter being an almost perpetual bloomer; the sepals and petals are creamy yellow. In the same house are a number of very healthy plants in 6-inch pots of *Sophrontis grandiflora*, carrying ten flowers each. This is very successfully treated at Oakholme. It is very impatient of removal or repotting, and these have remained in the same pots for a considerable time. As before stated, the Phalænopses in the East India house are very fine. There are about twenty plants, and include some especially fine varieties. The plants are mostly large and strong, and have vigorous branching flower spikes. *Lycaste lanipes*, in the same house, has been very attractive with its numerous large and singular creamy white flowers. *Vanda tricolor* is also flowering finely, the blooms very highly coloured. In the same house at the back are eight or ten handsome specimens of *Eucharis amazonica*, averaging 3 feet across, with fine stout leaves each 2 feet long. Such vigorous specimens are rarely met with; evidently the temperature suitable for Phalænopses agrees equally with *Eucharis*. In the *Odontoglossum* house there are many plants with strong flower spikes just about to open their flowers of *O. Alexandræ*, *O. Pescatorei*, and *O. cirrhosum*, the plants all in the most vigorous health.

RHODODENDRONS, AZALEAS, AND FOLIAGE PLANTS.

A year ago you published some notes from me respecting what is, I should suppose, one of the finest specimens of *Rhododendron Veitchianum* to be found in the country. This plant is again coming freely into bloom, and looks likely to be at the height of its beauty this week; it will be even finer than last year, owing to the increased size of the plant. There are upwards of 200 trusses of flowers upon it open and to open; about two-thirds of them are bearing three flowers each, the remainder having two. When I saw it 100 flowers were expanded, pure white, very fragrant and beautifully fringed, each about 4 inches in diameter. The house in which it is growing is a "half-span" roof, the longest side facing south. The plant is trained over the back wall. The centre of the house is occupied by large bushes of Camellias reaching almost to the roof, and which thus somewhat shade the Rhododendrons from the direct rays of the sun. On a narrow stage along the front of the same house are numbers of fine plants in pots of the greenhouse Rhododendrons, such varieties as *Princess Royal*, *Taylori*, *Princess Alexandra*, &c. A fine plant of *Lady Alice Fitzwilliam* (a beautiful large white-flowering variety lately introduced by Messrs. Fisher, Son, & Sibray, the flowers somewhat resembling *R. Veitchianum*, but having smooth edges, and the foliage being much smaller) has thirty trusses of flowers just bursting.

The conservatory is very gay with a good selection of greenhouse flowering plants, such as Azaleas, Camellias, Narcissus, Mignonette, *Chorozemas*, *Salvias*, &c., amongst which especially the Azaleas are very fine. A large specimen of *Souvenir du Prince Albert*, solid with bloom, is very effective, as are also similar specimens of *Criterion* and *Reine du Pays Bas*. Two smaller plants, however, of comparatively new varieties at once arrested my attention as being the largest and finest white varieties I had yet seen. The first was named *Remembrance of Lady Flora Hastings*, a somewhat unwieldy name, but a superb variety, the flowers 4 inches in diameter, single, pure white, very stout and wax-like. The second was a semi-double white variety, also very large flowers and pure in colour, named *Madame Maria Planchon*. In the large stove are wondrously fine specimen Crotons, several of them being about 6 feet high and nearly as much through, splendidly coloured; a specimen of *C. Weismanni* of the size as above is the finest example I have ever met with, and resembles a fountain of gold. There are also some very large and fine specimens of *Dracænas* and *Sphærogynæ*. A fine plant of *Imantophyllum miniatum superbum* in the same house is very brilliant with seven flower spikes. A walk through this establishment can be enjoyed by any lover of floriculture, as superior skill in cultivation is witnessed in every department, and reflects the highest credit upon the able gardener who has for upwards of twenty years managed them so well.—W. K. W.

THE PUBLIC GARDENS AND PLANTATIONS OF JAMAICA.—In Mr. Morris's report upon the above gardens the money value of rain in Jamaica is well shown in a paragraph quoted from Mr. Maxwell Hall's

estimate. A comparison has been made between so many inches of rain per annum and so many casks of sugar per acre. Thus there were 1559 casks per acre for 79 inches rainfall, and 1441 casks with 56 inches, so that the difference due to a larger or smaller island rainfall is on an average nearly one-tenth of the export sugar crop. This one-tenth export crop, for sugar and rum, represents in value nearly £100,000; but if other produce which is likewise affected by a greater or less rainfall, such as Coffee and Pimento, the difference would amount to a very considerable sum. During the year considerable attention was devoted in the herbarium to the medicinal plants of the island, and to forming not only a collection of botanical specimens, but also of the barks, roots, and the portions used for medicine. The value of this herbarium to the commercial interests of the West Indies was shown while working up the botanical classification of the indigenous plants capable of yielding fibre. It was found that the common native *Agave* (*Aloe*) of Jamaica was not, as had been represented in books on Jamaica plants, the *Agave americana*, but an entirely different species, the *Agave keratto* of Salm Dyck. The application of this difference, which appears to him only one of botanical nomenclature, to the industrial arts is that under the belief that this plant is *Agave americana*, and therefore capable of yielding valuable fibre, large sums of money were spent and lost in getting out machinery to clean fibre which was of inferior quality.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY.

THE Spring Show of this Society was held on the 8th and 9th inst. in the Waverley Market, Edinburgh, and was acknowledged to be the best that has been held at this season under the auspices of this Society. Of the 141 classes 114 were for gardeners and amateurs, the remaining twenty-seven for nurserymen. The prize money offered was £338, and for this 640 entries were made, being 120 more than the largest number in any previous year. The public took advantage of the floral treat afforded them to an extent that must have been gratifying to the Council, some 10,000 passing through the gates on the 8th, while on the second day the Show was also largely attended. On the forenoon of the 9th the children from several of the City institutions were allowed to inspect what, to them, must have appeared a vision of Fairyland.

The following brief notes give some idea of the more remarkable produce exhibited. Mr. R. Grossart, gardener to J. Buchanan, Esq., Oswald Road, was the sole exhibitor of a table of plants 20 feet by 5 feet, and for this the first prize was awarded. The arrangement was very good, most of the flowering plants being choice Orchids, the spikes of which rose up from among an undergrowth of Ferns, &c. The Azaleas were a striking feature; the first-prize four, the first single specimen, and the first four in 8-inch pots from Mr. John Patterson, Millbank, being models of good culture; others were of only inferior merit. For six stove and greenhouse plants Mr. Patterson was again first, staging two good Heaths, two fine Azaleas, *Anthurium Schertzerianum*, and an example of the old *Acacia armata*, which makes a showy exhibition plant. Mr. R. Grossart was second, a notable plant being *Cælogyne flaccida* in this collection. Mr. Patterson was again easily first for four Cape Heaths, his specimens being neat examples of *Ericas Victorix*, *profusa*, *florida* and *Bothwelliana alba*. The Orchids were more numerous and finer than we have seen them in Edinburgh, the competition being keener. Unfortunately the judging with regard to these failed to give satisfaction. For six plants Mr. R. Grossart secured the first place, having a grand *Cymbidium Lowianum*, *Dendrobium nobile*, *D. thyrsoiflorum*, *Ada aurantiaca*, *Vanda tricolor*, and *Cymbidium eburneum*. The second prize was secured by Mr. Curror, gardener to G. Douglas, Esq., Eskbank; *Denbrobium speciosum*, a fine *Cattleya Trianae*, and a profusely bloomed *Trichopilia* being noticeable. Mr. Findlay, gardener to J. McKelvie, Esq., 14, Osborne Terrace, third. For three plants Mr. R. Cockburn, gardener to H. More, Esq., Coltbridge Hall, was first with small plants of *Phalænopsis Schilleriana*, *P. Stuartiana*, and *Angræcum citratum*. Mr. Patterson second, and Mr. Wilkins, gardener to A. Fraser, Esq., Canonmills Lodge, third. In this class Mr. W. McDougal, gardener to W. Sanderson, Esq., Talbot House, Ferry Road, in this class had a wonderfully fine *Dendrobium Wardianum*, which bore four spikes about 110 flowers, the best spike being like an ordinary walking stick, and bearing forty-three blooms. For one Orchid Mr. P. Walker, gardener to G. Ure, Esq., Hope Park, Bonnybridge, was first for a good *Dendrobium nobile*, and Mr. R. Cockburn second for a fine piece of *D. Findleyanum* in prime condition.

Mr. Scott, gardener to Lord Elphinston, Carbery Tower, had the best four foliage plants; Mr. Grieve, Falcon Hall, being first for two foliage plants. For six pot Roses Mr. Patterson was to the front with handsome medium well-flowered specimens; Mr. Gordon, Niddrie, being second. Mr. R. Johnson took first prize for three pot Roses. For twelve Cyclamens Mr. Gordon was first, and for twenty forced plants Mr. Grieve was also awarded the first prize, and Mr. McIntyre, The Glen, Innerleithen, the second. With two large and profusely flowered *Deutzias* Mr. Grieve was first; Mr. Bald, Cannon Bank, being first for one specimen. Standard and dwarf specimens of *Mignonette* were very fine. For the former Mr. Richardson, Morningside Cemetery, was first, Mr. J. Cameron, Cargillfield, being first for the latter. Mr. Grossart staged three fine panfuls of Lily of the Valley for the first prize; Mr. Pearson, gardener to Lady Lucy Dundas, Beechwood, being first for one potful. Mr. McKinnon, gardener to Viscount Melville, Melville Castle, for four distinct exotic Ferns staged for the first prize beautiful medium specimens of *Davallia Mooreana*, *D. bullata*, *D. insignis*, and *Leucostegia immersa*. *Adiantums* were small but fresh, Mr. Johnston, Woolmet, Dalkeith, being first for three plants with *farleyense*, *gracillimum*, and *cuneatum*.

The prizes offered for Hyacinths brought a number of plants that were generally good, though we have seen them decidedly better, many of even the prize plants being too tall. Tulips and Narcissus were in much smaller numbers than in some previous years. For twelve Hyacinths Mr. Sime, Ridge Park, Lanark, took the first prize with good examples of *Von Schiller*, *Grandeur à Merveille*, *Garibaldi*, *Ida*, *King of the Blues*, and *Blondin*. Mr. Pearson, gardener to Lady Lucy Dundas, Beechwood, took the second place, his strongest examples being *Czar Peter*, *Lord Derby*, *La*

Grandesse, and King of the Blues. Mr. McLure, Trinity, was third. In the other classes provided in this section the competition was good, and well-grown plants were staged.

Amongst cut flowers Roses were the great attraction. For twelve *Maréchal Niels* Mr. Pearson was first with grand globular blooms; Mr. Ramage, gardener to Colonel Gillen, Wallhouse, being a very close second. With twelve *Gloire de Dijon* Mr. Walker, gardener to J. M. Richard, Esq., Clarendon, Linlithgow, was first with fine flowers of a light straw colour. Mr. Pearson second with much smaller flowers. Of twelve Roses Mr. G. L. Hunter, gardener to J. MacKnight Crawford, Esq., Lauriston Castle, staged fine examples, and gained the first prize. For twelve *Rhododendrons* Mr. Cuming, St. Rogue, was first; and with twelve trussed cut stove or greenhouse flowers Mr. McIntyre gained a similar position, having a fine truss of *Rhododendron Nuttalli*. Mr. Grossart was second with what many would consider much the best, eleven of the twelve being varieties of Orchids. For six buttonhole bouquets Mr. McLeod, gardener to R. Smith, Esq., Brentham Park, Stirling, was first with neat arrangements of Orchid blooms and Maidenhair Fern. Messrs. R. B. Laird & Sons took the first place for *Maréchal Niel* Rose in the nurserymen's class.

There was a small display of fruits, but of Grapes some seven lots of black were shown. Mr. McKinnon, Melville Castle, was first with *Alicante*, and Mr. McKelvie, Broxmouth, second with *Lady Downe's*. Mr. Johnston, Glamis, took the first place with a very good *Pine Apple*, Mr. McIntyre being second. For thirty Strawberries, Mr. Don, Newbyth, was first with *Garibaldi* and *President* mixed; Mr. Johnson second with *Garibaldi*. With six pots of Strawberries Mr. Don was first. For twenty-four kitchen Apples Mr. Killick, Maidstone, was first, *Lord Derby*, *Beauty of Kent*, and *Winter Queen* being finely represented. For twenty-four dessert Apples Mr. Robertson, Hartrigg, Hull, was first with a mixture of dessert and kitchen kinds and for twenty-four Pears.

Vegetables were fairly represented in numbers, and the produce was generally excellent. Four collections of twelve sorts were staged, Mr. Robertson being first. Some *Leeks*, *Turnips*, *Seakale*, *Asparagus*, *Broccoli*, *Celery*, *Peas*, *Potatoes*, *Carrots*, *Cabbages*, and *Brussels Sprouts* were the kinds included in this lot. Mr. Potter was placed second, the competition being very close. Mr. Logan, Coldstream, was third. Among the single dishes *Mushrooms* were specially fine; *Leeks* were large and good. Good *Onions*, *Cabbages*, *French Beans*, *Rhubarb*, *Broccoli*, and *Potatoes* were also exhibited by several growers.

In the nurserymen's section for a table of plants 40 feet by 10 feet, Messrs. Ireland & Thomson secured the first prize of £7 with a grand lot of plants, including among the ordinary class of *Azaleas*, *Rhododendrons*, &c., many pieces of *Orchids*, several good *Amaryllises*, &c. Messrs. R. B. Laird & Sons were second with a good number of plants, though less densely flowered than the premier ones. This firm had first for twelve hardy *Rhododendrons* in pots or tubs with immense beautifully flowered specimens, taking first places also for four *Azaleas*, for four greenhouse *Rhododendrons*, and for twenty-four *Hyacinths*; Mr. Sutherland, Lenzie, being second. Messrs. Ireland & Thomson had some grand *Rhododendrons* in 9-inch pots, for which they received the first prize, Messrs. Laird being second. With twelve *Coniferæ* Messrs. J. Dickson & Sons, Hanover Street, were the only exhibitors, and were worthily awarded the first prize. For four *Azalea indica* Messrs. Ireland & Thomson were first, and Messrs. Laird second. Messrs. Ireland & Thomson were first for four *Crotons*, being the only exhibitors of those plants. For a collection of hardy spring flowers Mr. Sinclair, Prestonkirk, took the lead with a group which contained many curiosities in the *Primula* family. Two pans of *Daffodils*, the one of single and the other of double flowers, were shown as having come from an original bed of the single variety. Mr. Robertson Munro received a second prize for a group, less showy and effective, but containing a very *récherché* collection of spring flowers, the yellow-flowered *Saxifraga Bensoniana Boylei* being especially conspicuous. For six new plants Messrs. R. B. Laird & Sons were first, and Messrs. Ireland & Thomson second.

Miscellaneous exhibits chiefly comprised tables of plants from nurserymen. Messrs. D. Methven & Son, Leith Walk, Edinburgh, had a very large group of decorative greenhouse plants, various *Rhododendrons*, *Roses*, *Dendrobiums*, *Japanese Maples*, forced shrubs, &c., very bright and effective. Messrs. Dickson & Co., Waterloo Place, exhibited a small group of the same class of plants, among which several *Orchids* were interspersed; notable among these latter was a variety of *Odontoglossum Alexandra* with light red spots, to which the name *Dicksoni* has been given. A certificate was awarded for it. Messrs. Gordon, Coltbridge, staged a large group of plants suitable for market, the front being composed of small plants of the pretty *Primula viscosa nivea*. Messrs. J. Mitchell & Sons, 106, Princes Street, exhibited a table laid out for dinner, the lighting being by incandescent lamps supplied with electricity by accumulators. The decorations were by Messrs. Todd & Co., 8, Maitland Street, and consisted wholly of *Daffodils*. This firm also showed examples of crosses and wreaths in their usual artistic manner.

MANAGEMENT OF HORTICULTURAL SOCIETIES.

I AM pleased your correspondent, Mr. A. R. Cox, is generous, and admits on page 292 the great improvement that has taken place in the vegetables exhibited by local competitors at the summer show held in Sefton Park. In my estimation the improvement has been very marked indeed, and this Mr. Cox admits is the result of competition. The advantage of having the classes open to all is thus proved beyond doubt. Great strides have been made; this is a step in the right direction, and there is no telling what degree of excellence might yet be attained. If the highest stage of perfection has been reached that it is possible to attain in the neighbourhood, an impression conveyed by your correspondent, then no further progress in vegetable culture need be anticipated. Progress has been made, and I fully believe that greater perfection can be achieved, not by excluding outsiders, who, if they only gain a few prizes, assist in the general work of progress (which horticultural societies are instituted to encourage) by encouraging losers to greater efforts.

Your correspondent takes into consideration only a very limited radius—four or five miles round the Liverpool Exchange—but he must remember

the restricted classes are for competitors residing within ten miles. This includes several localities where vegetables can be and are grown to a very high state of perfection. If societies are not stimulating horticulturists to improvement in a more extended radius than four or five miles round their immediate centres they are certainly not accomplishing the grand achievements I had given them the credit of doing. If this is the case, there is less reason than ever for restricting the schedule; it would not have been so bad had the classes in question been open to Lancashire and Cheshire, or the whole of the northern counties. Under such circumstances—judging from what I have seen at Liverpool both of vegetables and hardy fruits—I fully believe that local competitors could hold their own, and the task, which is optional, not "imposed," would accord to them the highest honours that could be attained.

I am aware that both Parsley and Carrots are difficult to cultivate in some soils, and this is not confined to the neighbourhood of Liverpool, but extends to localities, even in the pure atmosphere of the country where there is no sulphur or chemical vapours existing to contaminate the atmosphere. Those who have practised in the vicinity of large towns, such as London, Liverpool, Manchester, Birmingham, Newcastle-on-Tyne, and others, have a good idea of the atmosphere and its effects upon vegetation in general. Taking this fully into consideration, I am of opinion that vegetables can and will be better grown in the neighbourhood of Liverpool than has hitherto been the case.

The Shrewsbury Society was mentioned by me because it had been favourably noticed by Mr. Waterman, but I did not intend to convey the idea that no restrictions were imposed by that Society. I have not a schedule before me, but, if my memory serves me rightly, two or three classes only are open, the remainder for gardeners, amateurs, and cottagers in Shropshire and two other counties. If this is not correct, perhaps Mr. Cox or someone else will kindly correct me. It will thus be seen that this Society provides for four classes of exhibitors, while Liverpool and many others provide only for two.

The grand object of horticultural societies should be to provide for as large and varied a number of competitors as possible; by so doing a very wide interest in gardening is created. If prizes are offered as an inducement to the garden-loving public to contribute to the exhibition, a knowledge is created that the society exists, its reputation will annually increase, the only means by which success can be financially insured for an indefinite period. Shrewsbury is commendable in this respect, and the days upon which the exhibitions are held are regarded as a general holiday, and people flock from all parts to see the exhibition. This is as it should be, and every effort possible should be made to attain the end in view.—NORTHERNER.

ROYAL HORTICULTURAL SOCIETY.

APRIL 14TH.

DAFFODILS in thousands greeted the visitor to last Tuesday's meeting, and with the exception of the "Conference" last year, so extensive a display of these valued and popular flowers has never been provided at Kensington. All imaginable shades of yellow were represented, and but for the judicious employment of *Anemones* and a few other hardy flowers this would have had a rather monotonous effect. The introduction of a few *Palms*, *Ferns*, &c., also served to further relieve the preponderance of yellows. Small collections of *Orchids* and miscellaneous plants added their attractions to a gathering of exceptional interest.

FRUIT COMMITTEE.—Present: Harry J. Veitch, Esq., in the chair, and Messrs. John Lee, Wm. Paul, S. Lyon, John E. Lane, G. Bunyard, C. Ross, J. Willard, G. Goldsmith, J. Woodbridge, W. Denning, Harrison Weir, T. B. Haywood, and R. D. Blackmore. An admirable collection of thirty-two varieties of Apples was shown by Mr. C. Ross, Welford Park Gardens, Newbury, the fruits being in excellent condition, fresh, firm, and bright in colour, well deserving the silver medal awarded for them. The varieties were Northern Greening, Cox's Orange, Boston Russet, Broad-eyed Pippin, Brabant Bellefleur, Court Pendu Plat, Mannington's Pearmain, Annie Elizabeth, Cox's Pomona, Betty Geeson, which Mr. Ross states is grown in the cottage gardens about Newbury as the "Sauce Apple," Scarlet Nonpareil, Baldwin, Dutch Mignonne, Blenheim Pippin, Peck's Pleasant, Cornish Aromatic, Sturmer Pippin, Margil, Mère de Menage, Cockle's Pippin, White Nonpareil, Lewis's Incomparable, Loddington, Lane's Prince Albert, and Lord Burghley. Good fruits of *Catillac* Pear were also shown by Mr. Ross. The only other exhibit was a collection of *Rhubarb* from the Royal Horticultural Society's Gardens, Chiswick, which comprised the medium-sized *Linnæus* and *Early Red*, with Baldwin's *Scarlet*, *Defiance*, *Crimson Perfection*, *Hawkes' Champagne*, and *Buck's Early Red*, but the best in colour and general appearance was *Dancer's Early Red*, which was certificated last year.

FLORAL COMMITTEE.—Shirley Hibberd, Esq., in the chair. Present—Dr. M. T. Masters, the Rev. G. Henslow, and Messrs. W. Wilks, H. Bennett, W. Bealby, J. Child, H. Herbst, James Walker, J. James, Charles Noble, John Fraser, G. Duffield, H. M. Pollett, James O'Brien, H. Ballantine, Harry Turner, E. S. Hill, W. B. Kellock, and J. Douglas. A choice collection of new and rare plants was shown by Mr. B. S. Williams, Upper Holloway, comprising some finely coloured *Amaryllises*, Dr. Masters Improved, *Desdemona*, and *Joseph Broome* being especially noteworthy, the last-named having long dark crimson well-proportioned flowers. *Imantophyllum miniatum splendens* was notable for its bright scarlet colour, *Pancretrium calathinum* had large pure white flowers, the central crown being wide and shallow. *Odontoglossum Andersonianum grandiflorum* was remarkable for its large flowers. *O. radiatum* had a long raceme of handsome yellow and rich brown flowers. (Vote of thanks). The peculiar and interesting *Ochna multiflora* (figured in this Journal, page 261, vol. iv.), the richly spotted and lovely little *Odontoglossum nævium majus*, and a dark red narrow-leaved ornamental Beet named *Unique*, were also prominent in the group. Messrs. J. Veitch & Sons, Chelsea, contributed several of the handsome *Amaryllises*,

one of which was certificated, and the principal of the others were Serapis, white with pink streaks; Duchess of Edinburgh, veined with rose, and having a white bar in the centre of each petal; Alcides, crimson tipped with white, and Archimedes, dark scarlet. Mr. R. Clarke, Twickenham, was awarded a bronze medal for a fine group of Cyclamens, healthy and splendidly flowered. Mr. C. Turner, Slough, contributed a pretty collection of Tree Carnations, several of which were certificated, and others, as Snowball (white), Antonio (pink and white), and Mrs. Oldacre (deep rose) were well worthy of notice. Rose Gloire Lyonnaise, with numerous substantial creamy blooms, was represented by several plants. Messrs. Paul & Son, Cheshunt, showed an interesting collection of hardy and other plants, of which Grape Hyacinths, the brilliant blue Gentiana verna, several pretty Saxifrages, the Rose Gloire Lyonnaise, and the white Impatiens platypetala, shown as I. Sultani alba. A vote of thanks was accorded for this group. Mr. T. King, Rousham, had a collection of varied and attractive Primroses and gold-laced Polyanthuses. Messrs. W. Cutbush & Son, Highgate, staged a group of Azaleas and Laurustinus, which was greatly admired. The Azaleas included Imperatrice des Indes (double pink, crimson and white), King of the Whites (large and pure white), La Flambeau (single, very dark red), and Bignoniflora (bright rose, full, and of good form).

Of smaller collections there were several from amateurs, representing Orchids and several choice plants. R. H. Measures, Esq., The Woodlands, Streatham (gardener, Mr. Howe), showed a neatly spotted Odontoglossum named Measuresianum. Mr. C. W. Scott, Woodbank, Dumfries, sent flowers of a hybrid Odontoglossum, white with brown spots. Sir W. Marriott, Down House, Blandford (gardener, Mr. Denny), contributed a fine spathe of Anthurium Andeanum (vote of thanks) and the pure white Ornithogalum gracile. John Day, Esq., Tottenham, showed a spike of Vanda cœrulescens Lowianum, having a rich crimson lip. C. Dorman, Esq., The Firs, Lawrie Park, Sydenham (gardener, Mr. White), exhibited what was supposed to be a hybrid Dendrobium, named Dormanianum, which appears to be intermediate between D. crassinode and D. Wardianum. The pseudo-bulbs are like the latter, and the lip resembles the former; but there is a maroon spot at each side. From the same establishment came Odontoglossum constrictum, pale yellow with a white lip; and a freely flowered plant of the bright purple and graceful Dendrobium Dominii. H. M. Pollett, Esq., Fernside, Bickley, was accorded a vote of thanks for a fine panicle of Odontoglossum Pollettianum, the flowers darkly spotted and tinged with rose. Mr. John Matthews, Weston-super-Mare, showed specimens of his "Strawberry tiles and slug traps," which are formed so that they can be placed round the crown of a plant for the fruits to rest upon.

DAFFODILS AND HARDY FLOWERS.

It was announced some time since that a secondary Daffodil conference and exhibition would be held at this meeting, and some curiosity prevailed as to whether the number of exhibits would equal the expectations of the most enthusiastic narcissophiles. None could be dissatisfied with the display provided on Tuesday, for the number of flowers was nearly equal to the memorable Daffodil Show last year, and in some collections the varieties were even better represented than on that occasion. One of the side tables, the whole length of the conservatory, and a portion of the one on the other side, was devoted to the flowers, some of which were very tastefully arranged in Hyacinth glasses, others in conical green stands, and still others in the highly objectionable "blacking bottles," which some appear to consider the best adapted for them. An excellent lesson in graceful, natural grouping was, however, imparted by Miss Jekyll, Munstead, Godalming, and it would be well if others would adopt a similar style. In an irregular bank of fresh green moss were placed informal clusters of the most distinct Daffodils, the lovely Primula rosea, the purple P. pulcherrima, the elegant blue-tinted Iris stylosa, with overhanging clumps of Convallarias. Simple yet pleasing was this little group, and it rendered the long rows of glasses and bottles still more unsightly by the contrast. A bronze Banksian medal was awarded for this small but welcome contribution.

For the trade collections of Daffodils awards of silver-gilt Banksian medals were granted, and the five growers each brought some thousands of flowers. Those from Mr. J. Walker, Whitton, Middlesex, had a particularly handsome group, not perhaps containing so many flowers as some of the others, but being remarkable for their clean healthy freshness, fine form, and the select distinct varieties represented. They were all placed in neatly formed and variously tinted Hyacinth glasses, those in the front row being especially ornamental. About 180 glasses were arranged on the table and the majority of these contained distinct varieties, a good proportion of white and light forms being dispersed amongst the prevailing yellows. The large Trumpet Daffodils were particularly numerous, Michael Foster, Dr. Hogz, bicolor Horsfieldi, and John Bright being very remarkable for their finely proportioned flowers; and beautiful as are the numerous incomparabilis and Poeticus forms, the first-named group seemed to be preferred. As Mr. Harrison Weir remarks, judging from an artist's point of view, "there is a pleasing freedom of development about the Trumpet Daffodils which we do not find in the others, and the Poeticus type is almost painful in its suggestion of contraction." Each group, however, has its admirers, and gardeners or others who require a number of elegant flowers for cutting fully appreciate the charming Poet's Narciss, while in the London markets none is in such great demand. Mr. Walker had a fine series of the incomparabilis section, Dr. Gorman, J. G. Baker, rich yellow; John Bain, very beautiful, with pure white petals and bright yellow cup; and Mary Anderson, very handsome, creamy petals, and an orange cup, being notable.

The hybrids are innumerable, but the Leedsii and Burbidgei types were very elegant. The lovely Campervelle and the charming N. Poeticus ornatus were in strong force, but of doubles there were few, if the old N. Capax, with its star-like flowers, be excepted. Probably this preponderance of singles had much to do with the light graceful appearance of Mr. Walker's collection.

From Messrs. J. Veitch & Sons, Chelsea, came an excellent representative group, including all the leading and most distinct varieties tastefully arranged with a number of small Palms, Ferns, and little clusters of the brilliant Anemone fulgens. That magnificent Daffodil N. bicolor Horsfieldi was in grand form, and when seen in such condition it is not surprising the variety has gained so great a popularity. The exceeding large and long-titled N. incomparabilis giganteus Sir Watkin was similarly striking, but

happily its name is by common consent being abbreviated to Sir Watkin; it is very handsome in its proportions, and is undoubtedly "freely developed" enough to please anyone. N. major and major spurium, with its rich golden trumpet, and the delicately cream-coloured N. moschatus cernuus and its double variety, the beautiful Tenby Daffodil, N. obvallaris, were all admirably shown together with doubles of the incomparabilis albus plenus and Telamonus plenus type in large numbers. The N. Poeticus, N. odorus, Burbidgei, Bulbocodium, and Polyanthus groups were well provided for, amongst the last named being Soleil d'Or, yellow and orange, Gloriosus, white and yellow, and Grand Monarque, white and pale yellow, all useful distinct varieties, thoroughly well adapted for culture in pots, a method of treatment which suits these Narcissi capitably, and which yields abundance of flowers.

An extensive and beautiful collection was provided by Messrs. Barr and Son, Covent Garden, the bare enumeration of the varieties in which would fill a page. All the types were adequately represented, as might be expected from such an experienced and enthusiastic narcissophile as Mr. Peter Barr, but there were several of especial excellence that demand a note. One of the incomparabilis type, named Mary Anderson, was very handsome; a well-proportioned bold flower, standing out conspicuously amongst a host of others of the same type: the petals broad, white, and the cup deep bright orange. The pale yellow Trumpet Daffodil Rebecca Syme is noteworthy for its fragrance, which is aptly compared to Violets, and as the Violet-scented Daffodil it will soon probably be well known. N. spurium Henry Irving has a finely proportioned flower, and many others were similarly notable. Some interesting hardy flowers were also included in this group, not the least remarkable being the insect-like Ophrys in its several forms, O. bombylifera, O. arachnites and tenthrudinifera, and the flowers like curious vegetable counterparts of bees, spiders, and other insects. Of the rare Amaryllidaceous bulb Placea arzœ flowers were also shown, white striped with purple, and the neat light blue and white Puschkinia libanotica compacta was represented by several clusters of blooms.

From his wealth of Daffodils at Tottenham Mr. T. S. Ware contributed largely, and a most creditable group was formed with these and numerous choice hardy plants. Scores of fine varieties of Narcissi were represented, comprising all the best in cultivation, and well deserved was the silver-gilt Banksian medal awarded for this valuable collection. The gigantic Trumpet Daffodil formed one extreme, and at the other were the diminutive minor, nanus, and minimus, every intermediate in size being represented—the varied incomparabilis and the chaste Poeticus in profusion. Amongst the hardy flowers Anemones were beautiful, the early bright yellow Doronicums, the lilac-blue Iris stylosa, the brilliant blue Chionodoxa Luciliae, Grape Hyacinths, Primulas, especially the pure white P. nivea and the bright P. rosea possessing indescribable charms. Messrs. Collins and Gabriel, Waterloo Road, had a similarly extensive and praiseworthy display of Daffodils, Anemones, and hardy flowers, the Anemones of the Victoria Giant strain and fulgens type being, as we have repeatedly observed, as bright and handsome as could be wished. Berberis Darwinii and Tulipa Clusiana with its dark rose and white-striped flowers were also well shown.

Small collections of two or three dozen flowers were sent by the New Plant and Bulb Company, Colchester; Mr. Brown, Hull; C. W. Doel, Esq., Edge Hall, Malpas; E. H. Krelage & Son, Haarlem; J. Tyerman, Esq., Penlee, Tregoney; and Mrs. Lloyd Wynn, 7, Eaton Place, S.W., for which votes of thanks were accorded.

During the afternoon the Daffodil Committee held a meeting in the conservatory for the consideration of the flowers shown and correcting the nomenclature where necessary.

CERTIFICATED PLANTS.

Lælia bella (Baron Schröder).—This magnificent hybrid attracted much attention, for it has gained considerable fame as one of the most handsome and valuable forms ever obtained. It is the result of a cross between *Cattleya labiata* and *Lælia purpurata*, and shares the characters of both parents in a remarkable degree. The flowers are about 7 inches in diameter from tip to tip of the petals, which are broad, and with the sepals are of a uniform light rosy purple. The lip is wonderfully fine, over 2 inches in diameter and 3 or 4 in depth, of a most intensely rich crimson colour. The pseudo-bulbs are large, and the leaves are purplish on the lower surface. There were nine flowers in the spike.

Dendrobium macrophyllum Burkei (Baron Schröder).—An exceedingly fine variety of this well-known *Dendrobium* with flowers 5 inches in diameter, the sepals, petals, and lips being white, the latter of great size and with a faint purple tinge at the base. The flowers possess the same peculiar Rhubarb-like odour of the ordinary form.

Epiphyllum Russellianum Gartnerianum (Heinrich, Altona, Hamburg).—Some further information is needed respecting this plant, which is very distinct from the ordinary E. Russellianum, but whether it is derived from a cross with a bright-coloured form of E. truncatum or with some other genus we do not at present know. The typical E. Russellianum is of rather slender growth, the flowers have straight petals, not reflexed as in the other species, and the colour is a rosy tint. In the form certificated the stems are thick, flattened, abrupt, or truncated at the nodes, and fringed with stiff hairs. The flowers are bright red, about $2\frac{1}{2}$ or 3 inches across, the sepals and petals narrow, acute, and spreading equally like those of some *Cereus* or *Phyllocactus*.

Amaryllis Lady Howard de Walden (Veitch).—A pretty variety, with well-formed pure white flowers of medium size. A really white *Amaryllis* has long been needed, and this will unquestionably afford satisfaction in this respect.

Auricula Mrs. Moore (J. Douglas).—A grey-edged Show variety, with large blooms, of excellent form; the tube bright, the paste circular, narrow black body colour, and broad edge.

Carnation A. H. Kennedy (C. Turner).—One of the tree type, very free of strong habit, the flowers full, of excellent substance, and dark scarlet in colour.

Carnation T. W. Girdlestone (C. Turner).—Another of the same type, the flowers having a yellow ground colour streaked with bright red.

Azalea Elise Lieber (C. Turner).—A handsomely formed flower of great size, white, with a few fine purple streaks. Compact in habit and very floriferous.

Odontoglossum Andersonianum pictum (James O'Brien).—A charming variety, the flowers beautifully spotted with chocolate on a lighter ground.

SCIENTIFIC COMMITTEE.—Mr. F. Pascoe in the chair.

Hawthorn cankered.—Mr. Plowright forwarded a specimen of young branches attacked by *Ræstelia lacerata* through artificial impregnation by *Podisoma juniperi*. He observes: "Two years ago I drew attention to the fact that a form of canker attacked the Hawthorn trees, and a case of serious injury thereby had come under my notice. A specimen of the cankered Hawthorn was sent to the Scientific Committee, and I pointed out the peculiar honeycomb-like appearance presented by the bark. Mr. McLachlan examined this for insect remains or indications, but found none. Subsequently it occurred to me that the injury in question might be due to *Ræstelia lacerata* occurring on the bark of the young branches. Subsequent observations confirmed this view. However, in order to be sure, I infected some young Hawthorns last year with *Podisoma juniperi*, taking care to apply the fungus especially to the young branches as well as to the leaves (of course it is only this year's branch which will become affected by the parasite). In due course the *Ræstelia* appeared, not only on the leaves but also on the young shoots. I left the plants in my garden till now in order to show that the mycelium of the *Ræstelia* having done its work dies in the autumn."

Chimonanthus grandiflorus.—Mr. Noble sent a seedling, together with fruits and seeds of this plant, grown at Bagshot. The large dark green cotyledons somewhat resemble those of the Beech and Coffee plant, being about 1½ inch broad, with auricles at the base, and a strongly pronounced venation.

Narcissus bulbs attacked by a Pleospora.—Mr. G. Murray reported on the bulbs sent to the last meeting, and said that he was inclined to agree with Mr. Plowright that the fungus was a species of that genus, for such attack Hyacinth bulbs and Onion stems, and perhaps the bulbs of the latter as well. It was suggested that Professor Foster should send some fresh bulbs for cultivation.

Cypripedium, semi-double.—Dr. Masters reported on the specimen sent to the last meeting, and found that it had five additional petals in the place of four of the normally suppressed five stamens, and an additional petal in place of the rostellum or modified stigma, one of them being slipper-shaped like the normal labellum.

Lentils Attacked by Bruchus sp.—Mr. McLachlan exhibited Lentils bored by this beetle, which has the habit of laying its eggs in the unripened seeds. He did not know from what country they had been imported, but they had not been attacked here. The caterpillars live in the cotyledons. As a rule it does not affect the germinating power. Mr. Pascoe observed that it sometimes happens that the beetle cannot escape through the testa of the seed and so perishes within it. Colonel Beddome remarked that *Crotolaria*s in India are attacked in the same way.

Insect or Chinese Wax.—Mr. Maclachlan read a communication (which will be published in the *Gardeners' Chronicle*) on this product, and exhibited specimens of twigs of *Ligustrum lucidum* (?) coated with wax from the male insects; the female forming gall-like structures. He observed that the subject was important in two ways; that the wax is excreted (or secreted) by the male insect only, and that the female has a parasitic beetle of the genus *Brachytarus* attached to it, as is the case in some European species of *Coccidæ*.

Cryptomeria japonica, excrescences on.—Dr. Masters exhibited cone-like woody structures developed on this tree. They appeared to be arrested branches which had thickened without elongating, similar to "embryo buds" so common in Beeches, Cedars, &c.

Narcissus, heterogamous.—He also showed a blossom of a *Narcissus* having the style protruding beyond the uppermost stamens, and therefore exerted from the orifice, a unique instance of heterostylism in this genus.

Epiphyllum, hybrid.—A plant was exhibited bearing numerous scarlet blossoms. It was specially interesting as being a true hybrid, or rather "bigener," between *Epiphyllum* and *Cereus*. It had the stems and habit of the former, but the flowers were those of a *Cereus*.

Crocuses and Sparrows.—Dr. Lowe commented on the destruction by these birds of the flowers of *Crocuses*, and advanced as his belief that it was done for the sake of insects (thrips?) within the flowers, that great destruction occurred in some years and not in others, in consequence, he assumed, of the insects being more abundant in some seasons than others. Mr. Maclachlan questioned the presence of any insects at this season of the year, and said he had watched them devouring the pedicel (tubular base) of the perianth. Col. Clarke had his *Primroses* attacked in the same way, probably for the sake of the juicy ovary within.

Teazles.—Colonel Clarke exhibited specimens of the Fuller's Teazle from fields cultivated near Axminster, which were frequently accompanied by a wild species somewhat resembling the British *Dipsacus pilosus*. It appeared to be a foreign species, introduced probably with imported seed.

Garden Stock.—He also showed a curiously dwarfed form of this plant, said to be frequently cultivated by our ancestors, having slightly wavy leaves compacted together, giving the plant a dense conical form. It was said to come true by seed.

Cyclamen.—This was remarkable by a fringed growth appearing on surface of each petal, as in the Peacock Tulip. It was remarkable, however, that a similar structure occurred simultaneously on the upper surface of the leaves. This appeared to be similar to the outgrowths on the surfaces of Cabbage leaves when they assume the form of pitchers, and would seem to be due to hypertrophy of growth.

Plants Exhibited.—Mr. Loder showed cut specimens of *Ranunculus cortusifolius*, *Narcissus rupicola*, very sweet scented and near to *N. juncifolius*; *Spiranthes convallarioides*, with small white star-like flowers; *Villarsia parnassifolia*, and *Calceolaria Burbidgei*, somewhat like *C. Pavoni*.

Polyanthus Degenerated in Colour.—The Rev. G. Henslow showed specimens which had passed from a crimson to a brick-red colour on light soil in Ealing. He had observed the same on the gravelly soil of Dropmore. With this change there was correlated a tendency to shorten the style (of the long-styled form, to which all the plants happened to belong), till in many cases the flowers were homo-morphic. He had described a similar phenomenon in *Primula sinensis* (*Linn. Trans.*, 1877), and observed that it was only one out of many instances he had noticed in which what may be called

a "floricultural degeneracy" was coupled with an increased fertility by self-fertilisation. Mr. Darwin had found that a dark crimson *Pink*, normally strongly protogynous, when self-fertilised for years, became flesh-coloured and highly fertile. It is the same with pale-coloured *Pelargoniums*—e.g., *Christine*, &c. It was the invariable testimony of floriculturists that weedy-looking individuals of garden flowers were by far the most prolific. One gardener purposely kept inferior *Cyclamens* to raise seed from, which he subsequently crossed till brought to the required standard of floral perfection. Mr. Henslow offered as an explanation the very simple one of compensation between the vegetative and reproductive energies, which, though modifications of one and the same vital energy, are in a sense antagonistic. Large corollas and rich colouring, accompanied by finer foliage, together represent so much energy directed to the foliar organs, which includes the calyx and corolla. But when through poverty of nutrition these fail to be developed to the extent florists aim at, the flowers begin to degenerate in size and colour; but, on the other hand, the reproductive energies gain the ascendancy, self-fertilisation follows, and a greatly increased fertility is the result. But what is particularly observable is that no injurious effects whatever of a constitutional kind are discoverable.

JOINTING HOT-WATER PIPES.

WE have seen the letters in your issue of the second inst. respecting hot-water pipe joints, and thought the enclosed drawing might be of interest to your correspondents. We are now using them largely, and find

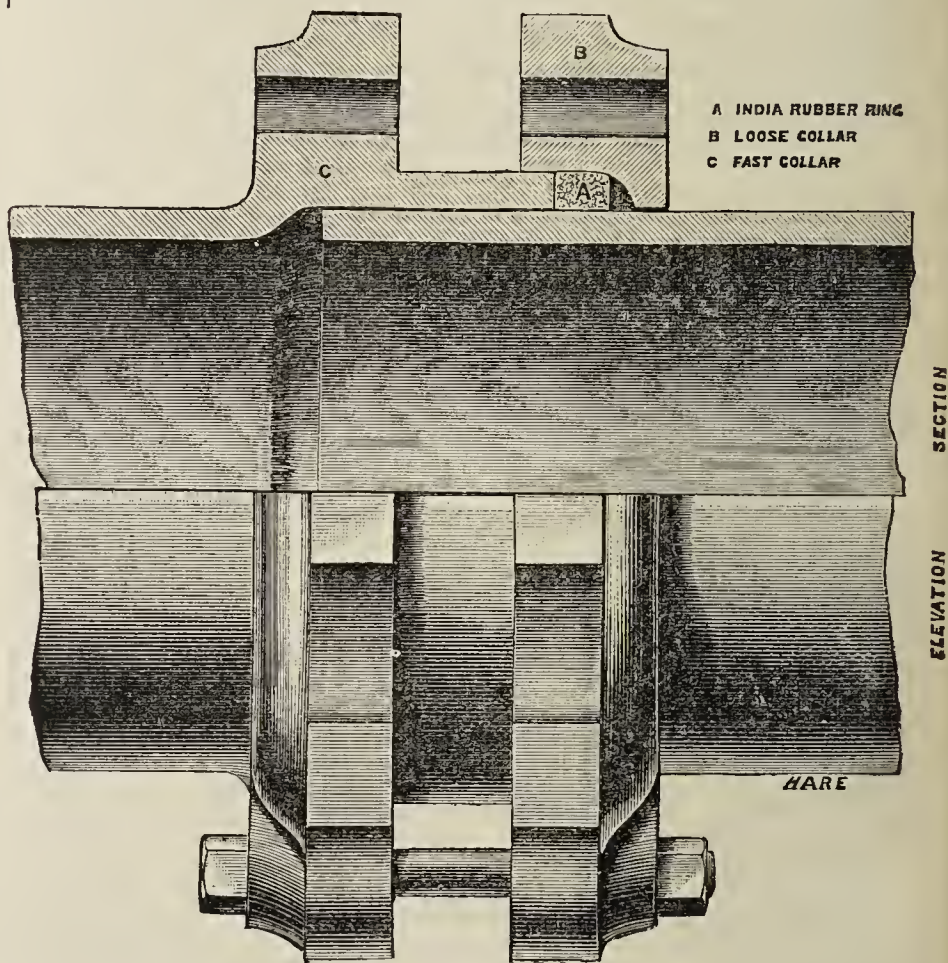


Fig. 57.

them to answer well. They are readily fixed, can be taken to pieces if required, and have the great advantage that a broken pipe can be repaired by a gardener in a quarter of an hour if he keeps a few of the sliding collars in stock. We discontinued the use of iron filings for joints some years ago, for, as Mr. Lynch says, they often burst, even when used by the most careful workmen. In one conservatory we knew them to stand well for more than fifteen years, and then over thirty joints burst in one summer, while the pipes were not worked. The reason so many valves fail is that gardeners often allow them to stand for months without working them, and thus allow sediment to set on the face or seat. If they would only work them once or twice a week good valves would keep in order for years.

In the new joint referred to (see fig. 57) the pipes have a socket C at one end only, the other end being a plain spigot, and they can thus readily be cut to any desired length. The socket has six flat surfaces, which allow of several rows of pipes being placed vertically without danger of their rolling down. As the connections all have spigot ends the number of patterns is largely reduced, and the stock required to be held small compared with the old socket pipes. The labour in fixing is much less, especially in trunks and other positions where it is difficult to make a caulked joint. The pipes can be taken to pieces more readily than caulked joints, and repairs are rendered easier.—FOSTER AND PEARSON.

EUCHARISES.

THE letter of "Amaryllid" in your last number mentions a new disease of Eucharis, and suggests that the mode of cultivation which he describes may be the cause. Whether my much simpler mode of treatment has anything to do with its freedom from disease with me I cannot say, but perhaps it may be worth describing. I may premise that I am one of that large class of horticulturists whose appliances are by no means equal to their aspirations, and that my one small hothouse has to grow Orchids (from *Odontoglossums* to *Dendrobiums*), Ferns, two or three Palms, plants in general, and to serve as a propagating house, so that it is impossible for me to give to each class the treatment recommended by specialists. In this I grow two 14-inch pots of Eucharises, which are now I suppose about twelve years old; they have not been potted for three or four years, but I think of repotting them this spring. The thermometer in the body of the house is often below 50° in winter, but the Eucharises, are near the pipes. The plants produce never, I think, less than three crops of flowers, varying from eighteen to forty blooms each every year which I suppose is a fair success.

Their cultivation is simply as follows:—Directly the flowerstalks appear the plants are watered most freely, and when these die they have liberal supplies of liquid manure till the leaves are fully expanded, when all watering is in a great measure withheld till the flowerstalks show again. This alternation of feeding and fasting seems to suit them exactly. The pots are generally brought into the drawing-room when in bloom, and take no harm there; but I would not answer for the result were they used for the decoration of draughty corridors.—DUCKWING.

WALKLEY AMATEUR FLORAL AND HORTICULTURAL SOCIETY (SHEFFIELD).

APRIL 7TH.

THIS remarkably prosperous Society held their first spring Show in the National Schools, Walkley, on the above date, and as regards the quality and quantity of the exhibits it cannot but be considered as an unqualified success. Before proceeding to particulars concerning them a few as to the characteristics of the Society may be of interest, and may perhaps induce some to attempt the formation of similar societies in the suburbs of other of our large towns, in most of which there is room for one at least, and, judging from the practical knowledge I have of the Walkley Society and the good work it is doing, I feel certain such societies deserve the hearty support and encouragement of everyone interested in horticultural pursuits, nurseryman, professional gardener, or amateur.

This Society was established about five years since in a suburban district of Sheffield, which had long been celebrated for its numerous well-kept cottage gardens and its number of enthusiastic amateur gardeners, most of them being clerks and shopkeepers engaged in the town during the day, and spending their evenings and early hours in the morning in the garden or greenhouse.

The initiative in forming a society was taken by Mr. T. B. Hague, a manufacturing cutler in Sheffield, who had for some time previously been a very active member of the Sheffield Floral and Horticultural Society, and who, from his experience in connection with this Society felt certain that in a district so devoted to amateur gardening as is Walkley a society for amateurs might easily be made both useful and successful.

On mentioning the subject to some friends, who, like himself, were ardent horticulturists, the business was taken in hand, meetings arranged, rules drawn up, officers elected and a society started whose success was assured from the first night of meeting. The rules, as then drawn up, are strict in not allowing the admission of any person as a member who is not *bonâ fide* an amateur grower, and who has not a greenhouse or a garden of a given size. Professional gardeners are only admitted as honorary members free of contributions, and are not entitled to exhibit in competition at any of the Society's shows. The meetings are held on alternate Friday evenings at the Freedom Hotel, Walkley, and at each meeting an essay is read on horticultural topics, most often by one of the professional gardeners who are honorary members of the Society.

At every meeting a miscellaneous exhibition takes place of plants, flowers, fruit, &c., whatever of interest the members have in condition and for the which no schedule is arranged or prize offered, but marks are awarded according to the merits of each exhibit, varying from one to six, which is the maximum number. Those achieving the honour of six marks for any exhibit are called upon by the chairman to describe the mode of culture which has proved so successful. Six of the professionals who are honorary members are annually elected as honorary judges, and attend in their turn the meetings of the Society to carry out this work.

The Society now numbers sixty to seventy members, and has an average attendance at its fortnightly meetings of thirty to forty. It is most evidently doing a good and useful work, and is setting an example which may well be copied by amateur horticulturists in other of our large provincial towns. In addition to the fortnightly exhibitions they have each year since the formation of the Society held a summer show in August, which has been open to the general public and been well spoken of; but not until this year have they ventured upon a public spring show. Unfortunately the weather proved very unfavourable, as rain continued to fall during a great part of the day, and doubtless prevented a great many from visiting the Show. I am glad, however, to find that the Committee are not discouraged, but are well satisfied with the success of their first attempt, and hope to repeat the same annually. The exhibits well filled the large school-room and a classroom adjoining, and, considering that it was without exception produced by amateur growers, was of great excellence; indeed, the exhibits in several classes, notably Hyacinths, Tulips, Deutzias, Spiræas, Cytisus, and dwarf *Azalea indica*, could scarcely have been exhibited finer by nurserymen or professional gardeners.

The principal prizetakers were for Azaleas, G. B. Stocks, T. B. Hague, M. Taylor, A. Hartley, and J. Saunders; for Camellias, J. Marson and M. Taylor; Cinerarias, G. B. Stocks and J. Marson; Deutzias, Messrs. W. H.

Barnes and T. B. Hague; Dendrobies, good examples of nobile and Devonianum, T. B. Hague; Ferns, Messrs. Hague, Taylor, and Swindon; foliage plants, Messrs. Hague and Taylor; Hyacinths and Tulips, Messrs. Stocks and Hague; Rhododendrons, Messrs. W. H. Barnes and Hague; Cytisus, Messrs. J. Marson and F. Barnes; Primulas, Stocks, Singleton and Hague.—W. K. W.



KITCHEN GARDEN.

VEGETABLE MARROWS.—Plants now growing under glass from seed sown a few weeks ago should not be kept in a warm house or frame too long. It is no advantage to have long spindly plants to turn out in May. Dwarf robust ones are much better. Place them in a cool frame and harden them off there without too sudden an exposure to cold air. Now is a good time to begin Vegetable Marrow culture in the open. Gather a few barrowloads of any old material that will ferment together, make it into a little hotbed, place two or three barrowfuls of pure loam on this, and a few seeds in the mound. They should be placed about 3 inches below the surface. The young plants will be up by the beginning of May, and prove both early and fruitful. If frost should come after they are through a flower pot should be turned upside down over each plant at night, or a handlight may be placed on to answer the same purpose. They must be protected from frost.

RIDGE CUCUMBERS.—These are very much valued in small gardens, and succeed admirably under the same treatment as the Marrows. Indeed, where space is limited a plant of each may be grown on one mound, and they will vie with each other in fruitfulness. In sheltered positions in the south they may both be sown later on in any good garden soil and without any hotbed.

PEAS.—Sow main crop varieties largely; form narrow trenches, manure heavily, and sow thinly, as there is no danger of seed failing at this season. Those sown now will be ready in July. Generally a hot dry time and a cool moist soil must be selected for them, as tender sweet Peas cannot be produced in shallow dry soils. Earth up and stake advancing crops. So far our Peas are looking uncommonly well.

BEETROOT.—More of this may be sown, and if the weather is favourable sow the main crop, especially in early and mild districts. Give it a deep not over-rich soil, have the drills 15 inches or 18 inches apart, 3 inches deep, sow thinly, and a good crop is sure to follow. As a rule I often think too much Beet is grown. It is very seldom a large patch of it is all used, and we do not approve of growing more of any vegetable than is really wanted.

KIDNEY BEANS.—Our remarks on these a fortnight ago were mainly directed to those under glass, but we will now speak of those for the open air. We find cooks as a rule prefer Runner Beans to Dwarfs, and the tall ones cannot be had too soon, but they will not force, and it is sometimes difficult to get them to form pods at first in the open air. The blooms often fall without forming fruit, and the crop is not secured until the plants are well established. In cold backward districts the first of the plants should be raised in pots. Fill 100 or so of 3-inch pots half full of rich soil, put two beans into each, cover with more soil, and place in a warm frame until the plants are a few inches high, when they should be hardened by degrees and be planted out by about the middle of May. These will fruit before any raised entirely in the open. In mild districts this extra trouble need not be taken with them, as they do very well outside. Select a warm sunny spot, open a wide drill 3 inches deep, sow and cover with light rich soil. They are very tender while young, and must be protected from frost. Laxton's Girtford Giant is the best of all in the Runner section.

CAPSICUMS.—These are not an important crop, but are easily cultivated. Sow a quantity of seed in a 6-inch pot, place it in a gentle heat until the plants are well through, then give more air, and pot singly when the plants are 2 inches or 3 inches high. They will grow and fruit freely in a greenhouse temperature during the summer, and we have had good crops from plants which were placed in cool frames after the bedding plants were taken out in May.

THE EGG PLANT.—This is another plant not commonly grown, but it is very useful where a variety of vegetables is required. We generally sow and grow it with the Capsicums, but it is benefited by a richer soil, and it also enjoys a higher temperature. We replot them until they are in 8-inch and 10-inch pots. These are generally placed on the back shelves of some vinery in summer, and never fail to bear many large fruits. They are rather subject to red spider and green fly, and both of these pests must be kept away by copious syringing.

CELERY.—Plants from early-sown seed are growing fast. If those pricked out first are in boxes move them into cool quarters, and get them hardened ready for planting out early in May. Lift young seedlings and dibble them out into boxes or frames 2 inches or 3 inches apart. Give them rich soil, and do not allow them to become dry at the roots. This is of the utmost importance, as dryness at the root will cause the plants to flower prematurely. Sow more seed for a late supply in a cool frame or in the open air, and place a handlight over the seed until the plants are well up.

CHERVIL.—This is often asked for by the cook, and a small bed of it should always be grown. It comes freely and quickly from seed, and if sown now it will be ready for use in six or eight weeks. It is not particular as to soil or situation, and when once sown it will always reproduce itself if allowed to seed, which it will do once or twice a year.

SWEET BASIL.—Another choice herb, often required, should always be in stock. It is not hardy; sow a little seed in a 6-inch or 8-inch pot, allow the plants to come on in a gentle heat, transplant when quite small into cutting boxes, and grow also in a gentle heat. A rich soil must be given it, and if it is not cut too low down it will sprout again and again during the season. We generally place a number of plants in one of our early Potato frames after the crop has been cleared, and allow it to become very luxuriant, then the whole is cut and dried for winter use.

LETTUCE.—Transplant those large enough into good soil. Keep them 9 inches or 1 foot apart each way. Sow more seed. Tie up those gaining a useful size to whiten the centres as soon as possible.

RADISHES.—Draw up and throw away all of these which have become too large for use in early frames. Sow seed in a small quantity every fortnight until August. Radishes are nothing unless tender and sweet, and this can only be insured by frequent sowing.

SALSAFY.—A few rows of this excellent winter vegetable should be sown. A deep rich soil suits it best. Fresh manure will cause the roots to fork, thus avoiding spoiling them in that way. Open the drills 15 inches apart, 2 inches deep, and sow the seed thinly. The roots are in no way liable to be injured by insects, but mice are very fond of the seed. Finish planting Potatoes, and use the Dutch hoe amongst all young and growing crops.

FRUIT FORCING.

FIGS.—Early Trees in Pots.—When the fruit shows signs of changing for ripening the ventilation should be increased whenever more air can be admitted without causing a check, and the flavour will be much improved by full exposure to the sun. Many of the fruits on large trees in pots cannot have this advantage, yet by judicious thinning, stopping, and tying, light and air will be admitted, which are essential at all times, as Figs ripened in a close moist atmosphere are insipid. The Fig is a gross feeder, and supplies of water at the roots through all stages are necessary, yet less will be needed when the fruit is ripening. Every effort should be made to have the foliage clean up to the commencement of ripening, and even when that takes place favourable opportunities for well washing the trees should be taken advantage of. Although Figs for home use should only be gathered when ripe, they are best for travelling when gathered before being fit for immediate table use. Brown scale when left undisturbed soon spreads over the young wood, extending to the foliage and fruit, when its destruction is attended by some difficulty; therefore means for its eradication should be taken in time, an insecticide being applied carefully to prevent and keep it from doing much mischief. Keep the night temperature at 60° to 65° with a little air, and 80° to 85° through the day from sun heat. Give top ventilation at 70°, and in the front at 80°, having plenty of moisture arising from water applied to the mulching and all available surfaces.

Succession Houses.—Afford generous treatment as regards heat, moisture, and stimulants where feeding is considered necessary, and syringe twice a day. Keep all stopping and tying well in hand, and thin the fruits where there are more than the trees are likely to finish satisfactorily. When grown under glass the free-bearing varieties show many more fruits than they are able to bring to maturity, and one error in management often ends in the loss of the entire crop. The safe plan is to carefully reduce, consider, and, if need be, thin again. The temperature should be kept 5° lower than that recommended for the early house.

Late Houses.—Trees in cold houses and against walls covered with a glass should now be tied in or nailed, and syringed early in the afternoon of fine days. Excellent crops are had from such structures in situations unfavourable to Fig culture against walls; but to insure full success there ought to be means for keeping out frost in spring and ripening the wood in the autumn. The house must be kept cool and dry through the winter, and instead of fires in the winter the trees should be unfastened after the leaves fall, tied in bundles, and protected with dry fern or straw.

PINES.—The weather is very unfavourable to the advancement which is expected at this season, hence every attention must be given to the management, especially as a free growth is now taking place, and every encouragement should be given. Watering must be seen to at least once a week, and every plant examined before any is given. Syringing may be much more freely practised at the time of closing, and abundance of moisture be present in the house when it is closed. Be very careful in disturbing fermenting beds which have a moderate degree of heat in them, lest by so doing it becomes increased to an extent that will be injurious to the roots of the plants. The temperature in fruiting houses should range from 80° to 95° by day and at about 70° to 75° at night; successional houses at 80° to 90° by day and 65° to 70° at night, the younger stock not taking any harm in a night temperature of 60°, and a proportionate increase by day according to external influences. In houses that have large panes of glass and the plants placed near to it, as they ought to be, a slight shade placed over the glass during the hottest part of the day until the foliage has become more inured to sunshine will be beneficial. Examine fruiting plants occasionally for the removal of all surplus suckers, retaining only those wanted for stock, and stake fruit requiring that attention to keep them in an erect position.

MELONS—In the early house or pit the fruit will be approaching

maturity, and will require syringing less frequently. In damping the house and plants avoid wetting the fruits, as this is liable to cause the fruit to crack; and although a somewhat high, dry, and airy atmosphere is advisable when the fruit is ripening, highly flavoured and finely finished fruits cannot be had unless the plants are clean and healthy, and this is absolutely essential when a second crop is sought from the same plants. If they are in good condition they will have set a second crop, which will have made good progress without in any way interfering with the size of the fruit now ripening. The male and female flowers should all be removed, and growths regulated by stopping and tying, being careful not to overcrowd the foliage, and not allow growths to be made which must afterwards be removed in large quantities. When the ripe fruit is cut the surface of the bed should be stirred; tread, and add more soil if necessary, giving a thorough soaking with tepid water, and afterwards using liquid manure for swelling off the next crop. Use the syringe freely on all favourable occasions. Remove bad foliage and exhausted growths, and rub quicklime into parts affected with canker. Successional plants in houses, pits, and frames will need frequent attention in stopping, thinning, and tying of the shoots. Impregnate the blossom in the middle of the day when the pollen is dry, acting so as to secure a regular set by operating on all the flowers at the same time, so that the fruit left may be regularly distributed over the principal shoots of each plant, and swelling together produce fruit of uniform size. Get some plants ready for planting in pits and frames from which Potatoes, Radishes, &c., have been removed.

Where the house set apart for winter-fruiting Cucumbers is liberated through spring plants taking their place in the supply, it may be utilised for Melons, giving it a thorough cleansing—the woodwork with softsoap and hot water, the glass with clean water, and the walls with hot lime. The whole of the soil should be removed, and the whole made sweet and clean for the reception of the Melons. The soil should consist of good loam rather strong, a tenth of old mortar rubbish, and a sixth of road scrapings, the whole well incorporated; should be placed in the house a few days prior to planting, and before the plants are put out be made firm, the soil being made firm about each plant.

THE FLOWER GARDEN AND PLEASURE GROUND.

Shrubby Calceolarias.—As these are usually wintered rather thickly in cold frames it is imperative that they be planted out temporarily and encouraged to grow to a good size before bedding time. Where only a few are grown these may be placed singly into 6-inch pots or disposed thinly in rather deep boxes filled with fairly rich soil. If a large number is required it is advisable to plant them in rough frames, turf pits, or even in wide trenches dug in the garden. A hard base for the two former should be chosen, and on this place about 6 inches depth of good light soil, preferably leaf soil, finishing with about 4 inches depth of good loamy soil. A layer of ashes should be placed in the bottom of the trenches, and from this the plants can be lifted cleanly. The plants having been previously stopped and breaking afresh, bed them out about 6 inches apart each way, and if they are kept well supplied with water and protected from severe frosts they will make fine plants by the time they are wanted.

Violas.—We winter these similarly to the Calceolarias, and temporarily plant about half the stock in the same way, only they are disposed 4 inches apart. Where the beds are not filled with spring plants the Violas may be permanently planted at once. They require a rich well-worked soil, and we find a heavy surfacing of leaf soil sustained them throughout the dry season of 1884. Blue or purple Violas are most effective in mixture with silver, golden, or bronze-leaved Zonal Pelargoniums, while the yellows look extremely well with Iresines or Crimson King Verbenas. When planting at this time we place small pegs where the Pelargoniums and other plants are to go, the Violas being worked in between them, and spaces are left for suitable edgings. Old plants will bear being freely divided at the present time, and all will be the better for being established early.

Sowing Choice Annuals.—Now is a good time to sow such indispensable kinds as Asters, none being better than the Victoria; Stocks, including the valuable East Lothian and the somewhat similar earliest flowering autumn sorts: Zinnias, Marigolds, Tagetes, Perilla nankinensis, Ornamental Grasses, Everlasting Flowers, Godetias, Ricinuses, Maize, Beets, Centaurea Cyanus minor, Dianthus, Chrysanthemums, Eschscholtzias, Portulacas, and Scabiousses. Boxes, pans, pots, and frames are all suitable for the purpose, and any good light soil will do. The seeds should be sown thinly, covered lightly, given a little heat, nothing being better than a mild hotbed, keeping them uniformly moist and shaded from bright sunshine. They will germinate quickly, and should be gradually exposed and hardened before they are drawn. If properly pricked off in pots, boxes, or beds of good soil, they will attain a good size by bedding-out time, and will start into growth strongly much more certainly than will any plants that have been raised a month earlier, and which are bound to experience a serious check before they are finally bedded out.

Propagating Verbenas.—Unless the stock is small nothing is gained by striking cuttings of Verbenas, Ageratum, Iresines, Coleuses, Alternantheras, and similarly quick-growing plants very early in the season. Cuttings inserted at the present time strike quickly, can be rapidly grown to a good size, and will eventually surpass those struck much earlier. Hotbeds or propagating frames are not needed, as the cuttings strike surprisingly well when the boxes are stood near or propped up over the hot-water pipes, the position being a partially shaded one. We use boxes about 24 inches long, 15 inches wide, and 6 inches deep. These are lightly drained, half filled with light sandy soil, and faced with silver sand. The cuttings are soft and short, cut to a joint, the lower

leaves trimmed off, then dibbled in thickly, or so as to just clear each other. They are then watered in, closely covered with squares of glass, stood in position, and shaded with sheets of paper when necessary. Any showing signs of damping are given air for a short time every morning and the glasses dried. In this manner many hundreds are quickly struck, these being eventually stopped, the tops struck if needed, and either placed in boxes or temporarily bedded out in warm frames.

Succulents.—Tops of *Echeveria metallica*, *Pachyphitons*, *Sempervivums*, *Kleinias*, and other strong-growing succulents that may be required for the carpet-bed arrangements may yet be struck, and in many cases will prove of more service than the old plants. After being cut and trimmed they should be laid on a sunny shelf to dry or heal, and then be either dibbled singly in small well-drained pots filled with sandy soil, or, in the case of the *Sempervivums* and *Kleinias*, be dibbled in thickly in pans or well-drained boxes of soil. *Agaves* are propagated by division, and *Kleinia repens* also divides readily either now or at bedding-out time. *Sempervivum tabulæforme* may either be raised from seed, or the centres should be picked out of strong old plants, and these will yield a great number of side shoots, which may be taken off and grown to a serviceable size for next year's bedding-out. They succeed in cold frames, but a moderately severe frost would damage them. *Mesembryanthemum cordifolium variegatum*, if very sappy, frequently fails to strike satisfactorily. The stock plants should be well exposed to the sunshine, and the cuttings, when dibbled into pans of sandy soil, should also be freely exposed.

Herbaceous Lobelias.—These should now be pushing up a number of suckers, every one of which may be separated and either boxed or potted off, and will make strong flowering plants this season. They are most effective when planted in masses and edged with golden or silver variegated Zonal Pelargoniums. Queen Victoria is, perhaps, the best variety of *Lobelia*.

Cannas.—Seedlings should be potted when they have perfected their first leaf, and if given 5-inch pots, good soil, and kept growing in a warm house they will soon become serviceable plants. The old stools may be started in heat, and before they are far advanced can be freely cut up or divided, every shoot separated with a few roots attached soon growing into a good-sized plant. The-c, again, are very effective in groups.

Salvia patens.—We have no blue-flowering bedding plant to equal this, and it is especially good for the back rows of ribbon borders. Old roots started in heat will furnish a number of cuttings, which may be easily struck in heat.

THE BEE-KEEPER.

FRAME HIVES AND QUEEN-REARING.

MARCH has not only passed away with its proverbial dropping and shining, but with a considerable amount of frosty and bleak weather, a most variable and untoward month throughout. It has had more frosty nights, and the thermometer registered but 1° higher than any month since winter commenced. Consequently the bees have been kept very much within doors. With a good store of pollen from last season and attended to with peameal bees are advancing rapidly. The main thing to be attended to now is seeing that no bees suffer from want of either essentials, though flowers of many kinds will soon be plentiful. The bees through stress of weather may be unable to get much good from them. This is quite a common occurrence even up till June; therefore, greater attention is required should April and May be cold and sunless.

The advantage of frame hives over straw hives will now be appreciated; their advantages, however, should be used and not abused. Manipulation cools the hive, encourages robbing, annoys the bees, causing them to gorge themselves and cease working; while frames not supplied with lateral slides but a quilt only cause the bees much extra labour and annoyance to propolise anew, but which is avoided by using lateral slides.

The first manipulation advisable beyond extending contracted hives is that of breaking up the stock hive into nuclei after natural or artificial swarming. This operation should be performed about the tenth day after swarming. A hive containing a dozen frames may be divided with safety into six or even more. Put two combs containing a queen cell into a box along with another frame or two filled with foundation. Attend to feeding, or a slab of candy may be laid on the top of the frames, which the bees will avail themselves of. These small boxes may be lashed together in threes or fours, which is better than having four nuclei in one hive separated by dividers. Much better for queen-rearing is the square Stewarton, for the reason that more combs are available to form each nuclei with a better chance of having the royal cells properly distributed.

The best hive of all for queen-rearing is the sectional hive; a hive of this sort may be divided into twelve nuclei—*i.e.*, if the stock hive is sufficiently strong in bees. I have been successful in raising queens and dividing these until each had no more than 500 bees, but fertilisation is surer and sooner effected when the bees are

numerous. When the nuclei are provided with comb containing young bees the risk of the bees deserting is not so great as when the bees are put into an empty hive. A number of young queens so brought forward and fertilised before swarming is general to be in readiness to supersede the old queen in stock hives immediately after the issue of the first swarm, is of incalculable advantage, becoming in three weeks' time as strong as they had been previous to swarming. When a young queen is to be joined it is necessary to crush all royal cells and cage the queen on or between her own combs with her subjects for twenty-four hours. As the bees are mostly young they will receive any fertilised queen even sooner than that, but it is best to be cautious. If the frames of the nuclei and stock hives are interchangeable a frame can be taken from the latter to take the place of the one removed from the nuclei, when another queen will be raised, and so a succession is kept up; only remember that to be sure of having full-sized queens the hives they are raised in should be well supplied with bees, although during the height of summer this is of less consequence than after the days are shorter.

Raising queens is more difficult in straw hives; still, where these are employed it is as essential to have fertilised queens ready to join to the old stock after the first swarm has issued as for frame hives. The bee-keeper should therefore make provision for the number of nuclei required. A few boxes about 8 inches square inside and of the same depth, with some frames, four for each box, will do well. Let one of the sides of the box be loose, so as to give freedom to inspect the combs and queen, or to close the proper distance to the frame; a slight tack will keep it in its place, and be easily withdrawn when required. Just before the queens are hatched the combs of the straw hive should be carefully manipulated and fitted into the little frames, which in most cases will be easily performed. Be careful not to crush the royal cells nor any of the brood. If a manipulating house or room with one window is in or near the apiary such work should be performed in one or other of them. When the combs are fully utilised divide the bees in equal proportions to each nucleus, and lash four together with an entrance to each opposite to the other. Should any one lose its queen join it to another. It is perhaps impossible to lay down rules for work such as the foregoing that will meet the requirements of everyone and every case, but what I have stated will be a help even to the most ignorant in such manipulations, and with a little tact will soon overcome all difficulties in one of the most essential manipulations towards profit in the apiary.

The National Bee-keepers' Union.—At pages 259-260 Mr. J. Hewitt makes some remarks upon my criticism, and asks that I should not refrain from pointing out its faults in order that the rules should be perfect. I have carefully read the rules, and I fail to see where I could improve on them. Rule 14, I think, provides for everything that is necessary or is likely to be; therefore I am of the opinion that the rules as they stand are good, and strengthened all the more by the singleness of purpose the promoters have in view—*viz.*, to secure to the honey raiser not only a market but a fair price for his produce.—A LANARKSHIRE BEE-KEEPER.

HONEY PRODUCTION IN CANADA.

A PAPER was read at the International Congress recently held in America from Mr. S. F. Pettit, of Belmont, Ont., as follows:—

"God has clothed and beautified nearly all parts of His footstool with flowers that fill the air with rich fragrance and delight the eyes of all. The humble poor as well as the opulent may enjoy them. But these are not the only uses for which they are designed. They each secrete a particle of nectar, some more and some less. The Dominion of Canada is no exception to the general rule; but, on the contrary, from the Atlantic Ocean to the Pacific, and from the Great Lakes and the 49th parallel, to the frozen regions of the North, flowers everywhere abound in great luxuriance and profusion.

"In Ontario, Quebec, and the Maritime Provinces, the greatest honey-producing tree in the world, perhaps, the Linden or Basswood, grows abundantly. The Soft Maple and Sugar Maple yield no inconsiderable quantity. From the latter, average colonies will, in favourable seasons, store 20 lbs. or more.

"Then we have the fruit trees, Grape Vines, and Willows, both small and great, in endless variety. Of weeds, at present developments, the Canadian Thistle stands first on the list as a honey-producer, but—'beware! beware! O, beware!' Then comes the Golden-rod, Ox-eyed Daisy, the Asters, &c., besides many others which go to make up the list.

"But the plants to which bee-keepers in the provinces named are most indebted, and to which they look for their greatest and surest supply, are the different varieties of Clover. Where the forests are cleared away these provinces are emphatically a land of grass—that is, the grasses here attain to great perfection, and where the land remains neglected it is soon covered with vegetation, white Clover doing its full share.

"The power of the Linden, or Basswood, to produce honey when all the conditions are favourable is a matter of wonder and astonishment. About July 15th the tree is profusely decorated, yea, nearly covered, with cream-coloured blossoms so filled with honey that the limbs literally bend under their loads of coveted sweets. At this time, if a limb be struck a sharp blow from beneath the honey will fall to the ground in a sweet

shower. But, unfortunately, the Linden does not, on an average, at least in my section of country, produce honey more than about two years out of five. Every other year is the rule, and besides that, caterpillars devour the foliage about three years out of ten.

"Linden honey is aromatic, of high pleasant flavour, clear, and of sparkling brightness. When well ripened it granulates solid. Clover honey is clear and bright, though slightly tinged with amber, is very sweet, although a clearly perceptible acidity is always present. It also candies solid. Thistle honey is clear and bright, of fine quality, and peculiarly pleasant. It candies slowly. These immaculate honeys have each an exquisitely delightful flavour peculiarly its own.

"In Keewatin, Manitoba and the 'Great Lone Land' or Canadian North-west, the sources of honey at present are confined principally to prairie flowers, which are very plentiful from early spring until frost. Willows abound, and will add considerably to the wealth of the bee-keeper; but, if I am correctly informed, the honey is of an inferior quality; therefore we must patiently await the developments which the near future will surely bring about in that great country. Both the soil and the climate seem to be peculiarly favourable to the production of white Clover, and it is rapidly taking possession of the soil where cultivation has destroyed the native grasses.

"I now desire to point out some of the advantages the Dominion of Canada possesses over the South in the production of honey:

"1, Clover springs up spontaneously over all the land.

"2, The summer season is comparatively short, but the honey flow generally is 'right smart'; and then, when the honey season is over, bees soon go into winter quarters, and do not rob and destroy one another, for the simple reason that they cannot do so.

"3, The sun shines each day in the Dominion of Canada from two to four hours longer than at New Orleans; but that is not all, darkness does not come on so rapidly after sunset as it does in the South. In a large portion of Canada twilight lingers all night, and bees can work long after sundown.

"Now, when we take into consideration the great territorial extent comprised in the Dominion of Canada, the fertility of her soil, the beauty of her summers, and the length of her summer days, may we not with safety conclude that by-and-by Canada will be able to produce hundreds of thousands of tons of honey annually for foreign markets?

"Perhaps someone will say, 'But what about your killing winters?' Well, I will state that although Canadian winters are long and sometimes terribly severe, yet, withal, they are pleasant, bracing, and enjoyable; and it is now a well-established fact that bees, when properly housed, will remain healthy for five months or more without a cleansing flight.

"All these advantages are not the only requisites necessary to make bee-keeping the occupation which we delight so much to laud to the skies; but the question of a market will soon be one of the most difficult problems that the apiarist will have to solve. Did you ever think of it, that nearly all lands within the temperate and torrid zones, whether mountains or valleys, hills or dales, as well as the isles of the seas—all, everywhere, invite the labours of the honey bee?

"We talk of Wheat belts, corn regions, the Cotton fields of the South and the Barley districts; we speak of the favourite locality of the Pear and the Apple, the Orange and the Lemon, &c., and each has its favourite and somewhat limited locality, but flowers and honey abound almost everywhere.

"Now, add to this the stubborn fact that California, in 1884, sent to the markets of Europe thousands of tons of honey at an average of less than 5 cents per pound, and we will have some crude idea of what our honey will soon have to compete with in the markets of the world."

Thos. G. Newman (Ills.) remarked that Manitoba could not be favourable for bee culture—the season was too short, and there was a lack of honey-producing flowers.

Mr. Wallace (Ontario) said that he fully agreed with Mr. Pettit's paper, and mentioned the fact that the Canada exhibit at Toronto was the largest ever made in America.—(*American Bee Journal*.)

TRADE CATALOGUES RECEIVED.

William Paul & Son, Waltham Cross, Herts.—*Catalogue of New Roses.*

Henry Bennett, Shepperton, Middlesex.—*List of New Roses.*

Dutry-Colson, Gand, Belgium.—*Catalogue of Horticultural Appliances (illustrated).*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Books (J. R.).—"Brewers' Flora of Surrey" is published by Mr. Van Voorst, Paternoster Row, London. Its price is, we think, about 7s. 6d.—(*H. J. T.*)—The last edition of the "Cottage Gardener's Dictionary" was published in 1882. The work was not re-written then, but contains an extensive supplement by Mr. N. E. Brown of the Royal Gardens, Kew. We know of no work with coloured plates of fruits being published since the Chiswick Apple Congress. The "Herefordshire Pomona" is by far the finest work of the nature indicated. "Hogg's Gardener's Year Book" is published at this office, price 1s.; 1s. 2d. post free.

Address (G. H. A.).—The establishment you mention is, we believe, in California; but you would obtain the full address from Mr. W. Bull, Chelsea.

Verbena venosa (A. R.).—Good plants inserted 9 inches apart will soon form a dense mass or close line in good soil. They transplant well, choosing favourable weather for their removal, and according the requisite attention afterwards. They continue flowering as long as any other Verbenas do, and generally longer, often being effective until the occurrence of frost.

Single Asters (H. M.).—If you cannot find seed offered in catalogues we are unable to assist you. Single flowers are occasionally produced from a packet of seed—sometimes too many of them, and the varieties can be perpetuated by saving seed from such flowers. It was in that way, we presume, that the correspondent to whom you refer obtained his single Asters. He is not a vendor of seeds.

Orchid Conference (E. H., Birmingham).—At the time this conference is held the International Inventions Exhibition will be open, all visitors to which will have the privilege of inspecting the Orchids. The admission upon Tuesday will, we believe, be the same as ordinary days—namely 1s.; but on Wednesday it will probably be 2s. 6d. The Orchid sent is a fine variety of *Odontoglossum gloriosum*, highly coloured and of good form.

Jacobaea Lily (G. R., Conyngham).—The above is the popular name of the plant of which you have sent a very fine flower, its botanical name being *Sprekelia formosissima*. It is not at all uncommon for imported bulbs to flower before producing roots: but with care in watering they will form now, and the more readily if the pot can be plunged in gentle bottom heat. When in free growth copious supplies of water are needed, the foliage being exposed to the full sun, in a temperature of 80° or more, a shelf in a not too moist stove being a suitable position. In August the water supply should be reduced, the plant being still fully exposed to the sun in a dry atmosphere, and after September no water will be needed until the spring.

Asparagus plumosus (Reader).—This is the name of the plant of which you have sent a withered example. As the discoloration occurs in both houses, we conclude that one is too cold and the other too damp. It requires heat, but not too much atmospheric moisture. Assign it the warmest position in your cool stove; do not syringe it, but afford shade from bright sun and give water with judgment, neither saturating the soil nor letting it get too dry. Our plants grow freely in a mixture of turfy loam with a little leaf soil and sand added, potting rather firmly. Possibly the root-action of your plant is defective, and fresh compost may be needed as well as a higher temperature and somewhat drier atmosphere.

Removing Rhubarb (G. Walker).—As a private individual—that is, not a nurseryman or grower of plants for sale—you have no legal right to remove the Rhubarb, which is the property of the owner of the land in which it is established, no matter whether you purchased and planted it or not. It is not the custom, however, for landlords to be exacting in matters of this kind. If you can remove the Rhubarb, or some of it, it may be successfully transplanted by first pulling any of the large stems and leaves, keeping the roots moist when out of the ground, planting carefully, watering well, and mulching the ground round the crowns with manure. It should not be pulled closely this summer, but a few stalks may probably be taken towards the autumn without doing much injury to the crowns.

Fungus on Euphorbia (W. W. W.).—Judging from examples sent, the plant appears to be in very bad condition; but whether its enfeebled state has invited the attack of the fungus, or whether the fungus attacks the healthy parts and destroys them, we have no means of knowing. We suspect, however, that the root-action of the plant is defective and the atmosphere too moist, especially in the winter. We should dissolve two or three ounces of softsoap in a gallon of water and well syringe the plant, dusting the stems when wet with flowers of sulphur, letting this remain on for a few days, then wash it off with warm water applied forcibly through a syringe. The plant should either be laid on its side when the sulphur is applied or removed, or other means adopted to prevent much of it reaching the roots. The plant appears to us, judging from the examples before us to require pruning, cleansing, some fresh soil, and a drier atmosphere.

Cytisuses (F. Lucas).—The species most generally grown for supplying Covent Garden Market are *C. Atleeanus* and *C. racemosus*. They are very beautiful now, plants in 5-inch pots being about a foot across and the same in height, densely covered with racemes of golden flowers. They are usually raised from cuttings of half-ripe wood inserted towards the end of August and kept close in cold frames till they "callus," then the pots are placed in mild hotbeds and roots extend quickly. The plants are then potted, kept close for a time, grown in light pits, topped as required to secure a number of shoots, shifted, grown in frames for a few weeks, then plunged in ashes in the open air, where they remain until the autumn. The shoots are topped several times, but not later than the beginning of August. In a young state the plants are grown in a mixture of turfy loam and peat with a little sand, but when placed in 5-inch pots the peat is reduced and dried cow manure added. They are potted firmly, watered carefully yet copiously,

and liquid manure is given when the pots are filled with roots. Abundance of water then and a sunny position are necessary for the production of satisfactory growth.

Disbudding Vines (E. F., Durham).—By all means remove some of the buds that “cluster round the spurs.” The retention of a number of weak laterals, which results in serious overcrowding of the foliage, is a very great and far too common mistake. Several buds may be safely rubbed off as soon as they commence swelling, retaining two or three of the stronger and best placed until the bunches are visible, when one, or at the most two, may be permitted to grow, and be secured to the wires. If the spurs are not more than 1 foot apart along each side of the rod one lateral is ample from each spur, and more will be injurious; if the spurs are 2 feet asunder two laterals may be retained, bearing one but not the other; and if this, as it probably will be, is at the end of the spur, it may be cut off when the fruit is cut, and the other will have more space and receive more light and air for the maturation of the wood. Many excellent Grape-growers rely on one lateral alone from each spur, regardless of distance, and the results justify them in adopting that practice; but as you desire, as you say, to have “two strings to your bow,” you may train two laterals, duly stopping them, provided all the leaves they produce can develop fully and freely under the full influence of light, not otherwise.

Chrysanthemums for Exhibition (A Subscriber).—To ensure having twenty-four blooms fit for exhibition at one time it will be necessary to grow at least thirty-six varieties in each section. The following varieties include all the best for the purpose:—Incurved: Prince Alfred, Golden Empress of India, Princess of Wales, Lord Alcester, Empress of India, Jardin des Plantes, Jeanne d’Arc, Queen of England, Barbara, Lord Wolseley, Princess of Teck, Hero of Stoke Newington, Mrs. Heale, Mr. Bunn, Lady Hardinge, John Salter, White Venus, Refulgence, Nil Desperandum, Mrs. G. Rundle, Prince of Wales, Alfred Salter, Venus, Mrs. Dixon, Cherub, Mr. G. Glenly, Princess Beatrice, Lady Slade, Bronze Jardin des Plantes, White Globe, Novelty, Mr. Brunlees, White Beverley, Golden Queen of England, Eve, and Isabella Bott. Japanese: Madame C. Audiguiet, Meg Merrilees, Baronne de Prailly, Fair Maid of Guernsey, Boule d’Or, Criterion, Thunberg, J. Delaux (F. A. Davis), Sarnia, Golden Dragon, Comte de Germiny, Margaret Marrouch, Mrs. Mahood, Mlle. Lacroix, M. Astorg, M. Burnet, Japonais, Hiver Fleuri, Peter the Great, Val d’Andorre, Duchess of Albany (Jackson), Triomphe de la Rue des Chatelets, Fanny Boucharlat, Mons. Tarin, Soleil de Levant, Mons. Desbrieux, Elaine, Grandiflorum, Flamme de Punch, Madame Berthie Rendatler, Album Plenum, M. Ardene, Triomphe du Nord, M. Deveille, Red Gauntlet, and Agrements de la Nature.

Transplanting Shrubs (Wimbledon).—Very much depends on the size and condition of shrubs as to their successful transplanting, and a great deal upon the way in which the work is done. Evergreens that have been long in the same position and thickly crowded together never succeed so well after removal as others do that have been occasionally transplanted and thinly grown. We have removed evergreens of almost all kinds in April, and lost few or none; but the ground was ready for their reception, including the necessary excavations, before the shrubs were taken up. This, too, was done carefully, securing as many fibrous roots as possible with a mass of soil adhering. Some persons fail by attempting to secure a greater ball of soil than can hold together in transit, and the whole falls away. Judgment must be exercised in this matter. It is important that the roots be kept moist when out of the ground. We have sometimes seen them quite dry and shrivelled by exposure to the air. This should never be allowed; and if they arrive from a nursery in that state we should give the vendor the option of taking the shrubs hack or making good such failures that might occur. Before planting such dried examples it is advisable to immerse the roots in water for a day. In planting, the shrubs should be made quite firm, well watered, and afterwards syringed to check evaporation from the leaves, and if the foliage can be kept fresh new roots will soon be produced. Rhododendrons, Box, Aucubas, and Yews transplant well now; Hollies and common Laurels are more liable to fail, but there is little risk if they are well rooted and the work is well done. Portugal Laurels do not grow so well after removal, and still more difficult to establish are Evergreen Oaks.

Water Spring in Cellar (Beta).—We sympathise with you, having had a boiler hole that was a source of great annoyance and expense. The water rose to the furnace bars, putting out the fire, and as drainage was out of the question we, after spending much in builders’ advice, masons’ labour, and cement, decided to act for ourselves. We had the floor broken up and removed, then made a hole near the centre so that all the water ran into it, this was carried out in buckets and to some distance from the stokehole so as not to drain in again quickly. It goes without saying that a pump and wood spout to carry off the water would have been a more expeditious plan. Around the side walls we took out a trench 9 inches wide and that depth, and put in about 6 inches depth of clay, which was rammed firmly down, putting a drain pipe through to where the water came, which took the water to the centre hole. We then ran a wall up inside next the outside walls of the stokehole 4½ thick in cement, and filled in the space or interstices between the two walls with cement run in, taking this wall up 6 inches higher than the height the water had risen to before, and let it set before proceeding further. The drains were continued to the hole, and we then put 6 inches of clay all over the bottom, having excavated the floor to that depth, and rammed tight, so that we had only the hole in the centre through which the water had drained, and this we closed up with clay, but not until we had laid the whole of the other part of the floor with bricks on flat in cement, and allowed time for them to set. The filling up of the hole was done by blocking up the drains well back with clay, and then the hole in a similar manner, finally closing or filling up this part of the floor with bricks laid like the other part in cement. We were told the water would rise above the brickwork, which we ought to have stated was not only laid in cement, the external face plastered with cement, also the floor, yet as it was fully 6 inches higher than the water had previously found its level at, did not happen, or if it had, what was to hinder the cemented walls being taken higher? In your case we should make a hole in the centre, have drains from it to the side walls and through them, and pump out the water and keep it down. Then pick out the joints of the wall and rough its face with a pick, plastering with cement. Then serve the floor similarly, ex-

cepting the hole, and when the cement is set stop up the drains with clay, making the hole also good with clay, then rubble run with cement, finishing off with cement. We do not think you will be again troubled with the water. The best Portland cement only should be used, and in about equal proportions with sharp sand. Avoid loamy sand, the sharper it is the better.

Names of Fruit.—(F. H., Kingskerswell).—Minchall Crab.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists’ flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (H. R. W.).—Hahrothamnus fascicularis. (G. M.).—The Fern is Lastrea Filix-fœmina Victoriae. Your Camellias are not species, but varieties that have originated from seed, and such we do not undertake to name. We can only say the striped flower resembles caryophylloides, the red one conspicua, the other Chandleri elegans. (J. G.).—The small yellow-flowered shrub is Berberis empetrifolia, which can be propagated by seeds sown in frames, by cuttings inserted outside in autumn, or by layers. The other is Atrageus sibirica, to which we shall refer again shortly.

COVENT GARDEN MARKET.—APRIL 15TH.

No improvement owing to the holidays. Business still very quiet. Strawberries, owing to the bad demand, are much lower.

FRUIT.

Apples	½ sieve	2 6 to 4 6	Oranges	100	4 0 to 7 0
Chestnuts	bushel	16 0 0 0	Peaches	per doz.	0 0 0 0
Cobs, Kent .. .	per 100 lbs.	55 0 0 0	Pears, kitchen ..	dozen	1 0 3 0
Currants, Red ..	½ sieve	0 0 0 0	„ dessert	dozen	0 0 0 0
„ Black	½ sieve	0 0 0 0	Pine Apples English..	lb.	1 6 2 0
Figs	dozen	0 0 0 0	Plums	½ sieve	0 0 0 0
Grapes	lb.	5 0 8 0	Strawberries .. .	lb.	3 0 6 0
Lemons	case	10 0 15 0	St. Michael Pines ..	each	3 0 7 0

VEGETABLES.

Artichokes .. .	dozen	2 0 to 4 0	Lettuce	dozen	1 0 to 1 0
Asparagus .. .	bundle	7 0 8 0	Mushrooms	punnet	0 0 1 4
Beans, Kidney ..	100	1 0 0 0	Mustard and Cress	punnet	0 2 0 0
Beet, Red	dozen	1 0 2 0	Onions	bunch	0 3 0 6
Broccoli	buundle	0 9 1 0	Parsley	dozen bunches	2 0 3 0
Brussels Sprouts	½ sieve	2 6 3 0	Parsnips	dozen	1 0 2 0
Cabbages	dozen	0 0 1 0	Potatoes	cwt.	4 0 5 0
Caulicums	100	1 6 2 0	„ Kidney	cwt.	4 0 5 0
Carrots	bunch	0 3 0 4	Rhubarb	bundle	0 4 0 0
Cauliflowers .. .	dozen	2 0 3 0	Salsafy	bundle	1 0 0 0
Celery	bundle	1 6 2 0	Scorzoneria	bundle	1 6 0 0
Coleworts	dcz. bunches	2 0 4 0	Seakale	per basket	1 6 2 0
Cucumbers	each	0 3 0 6	Shallots	lb.	0 3 0 0
Endive	dozen	1 0 2 0	Spinach	bushel	2 0 4 0
Heros	buuch	0 2 0 0	Tomatoes	lb.	0 0 0 0
Leeks	bunch	0 3 0 4	Turnips	bunch	0 4 0 0



WAYS AND MEANS.

“I’LL have nothing more to do with artificial manures. I am sixty-two years old, and have thrown away enough money upon the worthless trash in my time. Farmyard manure shall serve my turn now, for with that at any rate I cannot go far wrong.” “That is tantamount to saying that the results obtained from the use of artificial manures for many years have on the whole proved unsatisfactory, or, in other words, you have not had a fair return upon your outlay,” said we in reply to this outspoken declaration of a bluff old farmer, who with the aid of his son is farming five hundred acres of good corn land, and whose words merit attention. He went on to say that it was so, and that it was going too far to apply the term of worthless to any of the manures which he had tried, for all of them did a little good; and what he intended to say was that they did not do enough, and that to use much more per acre than he had done would be simply ruinous. He had evidently never heard of obtaining the manures separately and mixing them at the farm in the manner we have so repeatedly explained, nor, we venture to say, have nine-tenths of the farmers to whom such knowledge is a matter of vital importance. Yet we do not despair of helping many of them out of the hands of the middlemen with their ruinous prices and special mixtures, for the trials of artificial manures which were begun some ten years ago by the Aberdeenshire Agricultural Association, and more

recently by a more powerful Association in Sussex, have not only done much good in those counties, but their influence is gradually spreading despite powerful opposition, and we are now told that the Norfolk Agricultural Society is about to make the attempt of testing the effect of different kinds of manures on the various soils of that county. Well done, Norfolk! say we. It is high time farmers did know what it is they pay so dearly for, and we repeat here well has Professor Jamieson said that the farmer's eyes would be opened if he would place his manure bill before a chemist and ask him to calculate how much he has paid for useless or hurtful ingredients. We also repeat that not only must we have the right sorts of manure in correct quantities, but it must be applied at the right time. Already this year have we strong evidence of the importance of this timely use of manure. The dressing given to the grass land in February was quickly dissolved and washed down to the roots, telling upon the grasses so powerfully that they are now already stronger and thicker in growth than that which was dressed long before with farmyard manure. To make the trial as fair and the results as clear as possible we took a few acres on each side of a carriage drive, dressing one side with farmyard manure and the other with home-mixed artificial manure.

In a consideration of the ways and means by which we may "meet the times," and do all that is possible to overcome our difficulties, the question of manures is so important that we have been led involuntarily into giving more space to it in this article than was our intention. The mention of farmyard manures leads the mind naturally onwards to the animals of the farm. Surely it is patent to every thoughtful farmer there is considerable room for improvement among such animals. Turn where we may among ordinary farms, and we find Irish Shorthorns in the yards, simply because they predominate at most of the fairs in the southern and midland counties; and yet it is notorious that they grow slowly and ripen late, and cost so much to "finish" that anything like profit beyond the manure is out of the question. Take an equal number of them and of well-bred Sussex beasts of the same age, place them under similar conditions of treatment, and it will be found that the Sussex beasts will be ripe for the butcher many months before the Irish which are pressed upon us by the middlemen, who make handsome profits of the droves of them which they purchase so cheaply at Bristol and send about the country for easy-going farmers to waste their substance upon. We mention the Sussex breed merely as an example of the class of animal wanted generally. Other counties have excellent home-bred beasts, but there is not enough of them. Let any man of enterprise place enough of such beasts upon the market to meet the demand which undoubtedly exists for them, and the trade in Irish beasts would inevitably suffer so much that it would either die out or a better class of animals would be brought into it.

Low prices resultant from foreign competition are unavoidable, but do we not make bad worse by not being on the alert to take every advantage offered us in the early maturity of improved breeds? It is of vital importance that a farmer's capital should bring in quick profits, however small they may be. Only give us enough of the "nimble ninepence," and we can still make farming answer. That the profit upon cattle is to be found in the manure is a popular saying with which we have never felt satisfied, and when it is seen how great the difference is between good and inferior stock it follows that there must be a material difference in the result. This is a question of ways and means pressing strongly upon us, and it must not be ignored. Unfortunately the remedy cannot be applied at once; our aim is to create a demand for superior beasts, and the supply will sooner or later be forthcoming. We know several gentlemen who are breeding cattle for the butcher largely upon their own farms, and their tenants will certainly draw their supplies from such a source rather than by Irish beasts at the fairs.

(To be continued.)

WORK ON THE HOME FARM.

Horse and Hand Labour.—Root-sowing, by which we mean Mangolds and Carrots, is fast being pushed on. We are always anxious to get in the Mangold seed by the middle of April, to get a forward strong plant and a heavier weight per acre than is possible if we wait till May before sowing. It is true that April-sown Mangolds are apt to bolt to seed, but the per-centage is so trifling as not to affect the final result, which is almost invariably satisfactory. Our favourite Mangold is the Mammoth Long Red, and under the culture explained a fortnight ago we obtain excellent crops of it in a light soil, some of our best roots last year weighing from 20 to 23 lbs., which in so unfavourable a season for root culture was very satisfactory. Intermediate Carrots are being sown after Rye. We like a good heap of them both for horses and cows in winter. They are of easy culture, and this short thick-rooted sort may be sown with advantage for another month, so that several sowings will be made of it as the land is cleared. A dressing of farmyard manure is given to the Rye land that is mown for the cows; where sheep are folded no other manure is required. The manure is ploughed in and the land well worked to get a fine seed bed before the Carrot seed is drilled in.

Much useful work has been done recently in putting fences and hedges in thorough repair, and in trimming or cutting down trees encroaching too much upon the roads. We dislike very much seeing hay pulled off the waggons and hanging upon the overhanging branches alongside gates and roads. A waggon will now be sent all round the boundaries of the farm to collect such trimmings and all heaps of sticks and stones picked off the pastures. It answers best to make this a special job, and to see that it is done thoroughly. Neatness is inexpensive, and we like to have things trim and snug upon a farm. Gates and fences, new and old, will now be tarred, both to preserve them and to give a fresh appearance to them for the summer. This is done annually and costs very little. There is much slovenly practice upon farms that we deplore, and after all it is more a matter of habit than of necessity. The present time is a good one to look over farm implements, and to have them put in a state of thorough repair. Mowing and reaping machines should be examined carefully, for so much depends upon the soundness of these implements when the time comes to use them, a breakdown often leading to a serious loss of time when every hour is of importance. There should always be a couple of extra driving rods and of other parts of the machinery liable to much strain.

OUR LETTER BOX.

Nitrate of Soda for Grass (J. P.).—In reply to your inquiry as to whether nitrate of soda is good for old grass on dry sandy soil for hay crop, our reply is that it would almost certainly stimulate the growth of the grasses, which in consequence of increased vigour would extract more than the ordinary quantity of phosphate from the soil, and leave it poorer for the next crop. Bearing in mind that contingency, we should prefer mixing nitrate of soda with twice the quantity of bonemeal or superphosphate of lime; 2 cwt. of the former and 4 cwt. of the latter would be a good dressing. It would have been better applied sooner, perhaps, but as you reside in the north take advantage of the first showery weather for sowing the mixture, and it will do good.

Ensilage for Sheep (H. M.).—Ensilage has been used for feeding sheep in this country, and more extensively in France; and in every instance which has come under our notice it has been eaten with avidity by most of the sheep, but a few do not take kindly to it at first. It is also liable to render the sheep costive if used alone, but a moderate addition of a fermented mixture of pulped roots and chopped hay corrects this. Sheep certainly do well upon a diet consisting principally of ensilage, and with a little caution and watchfulness it may be used with advantage, especially in such a cold late spring as we are now having.

Sheep (Inquirer).—Just as we are going to press we receive your letter. It cannot be answered this week. Delay is caused by inserting matter for the editor in a business letter to the publisher.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.				IN THE DAY.				Rain		
	Barometer at 32° and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.		On grass.	
1885.											
April.											
Sunday	5	29.783	42.6	39.3	N.E.	42.0	51.4	30.3	81.2	24.7	0.188
Monday	6	29.244	45.7	43.6	S.	42.4	53.0	40.4	92.8	35.1	—
Tuesday	7	29.439	42.3	41.3	N.E.	42.3	54.6	32.1	90.3	28.7	—
Wednesday ..	8	29.563	40.7	38.8	N.	42.7	46.5	38.2	49.8	36.8	—
Thursday	9	29.572	41.9	39.7	N.W.	42.2	45.6	38.4	61.3	37.2	0.028
Friday	10	29.552	41.3	40.0	W.	42.2	45.2	37.6	56.8	34.8	0.054
Saturday	11	29.654	43.2	41.6	N.E.	42.2	51.3	38.3	87.2	30.7	—
		29.544	42.5	40.6		42.3	49.7	36.5	74.2	32.6	0.270

REMARKS.

5th.—Fine day, cloudy at times.
6th.—Heavy rain early; unsettled morning, with slight showers; fine afternoon and evening.
7th.—Fine, but without bright sunshine.
8th.—Dull and damp.
9th.—Cloudy and drizzly all day.
10th.—Rain in early morning and afternoon; dull and damp between.
11th.—Rain early; fair morning; cloudy afternoon.
A cold, dull, and unsettled week, but scarcely any rain fell during the daytime. Mean temperature slightly below that of the preceding week, and about 3° below the average.—G. J. SYMONS.



COMING EVENTS

23	TH	Royal Society at 4.30 P.M.
24	F	Quekett Club at 8 P.M.
25	S	Royal Botanic Society at 3.45 P.M.
26	SUN	3RD SUNDAY AFTER EASTER.
27	M	
28	TU	
29	W	

AURICULAS IN THE ASCENDANT.

ONCE a year there is a great gathering together of these loveliest of alpine flowers and their cultivators in London, and each year the interest in the flowers appears to widen and deepen. It does not follow that the magnitude of shows increase. There may be a few plants more or less staged on one occasion than another—the weather determining the difference mainly, as one grower's Auriculas may be over while those of another may not quite be "in" at the particular date of the meeting.

The northern growers have more than once been handicapped in this matter, and have either had to refrain from competition or force out the blooms too rapidly and stage them at a disadvantage. Only persons thoroughly imbued with a love for the flowers they cultivate so well, and animated with a strong and most commendable desire to induce others to admire and grow them too, would subject their plants to such risks as are involved by unnatural forcing and long transit.

It is always a misfortune when the northern growers cannot exhibit in their best manner. When their plants and flowers are just as they like to see them they appear to possess a sturdiness, refinement, and brightness that is not as a rule equally represented in Auriculas grown in the south. Altitude and brisk summer breezes appear to stamp the northern plants with a character all their own. We shall never forget the climb to the summit of a formidable hill in Yorkshire, nor the wonderful sturdiness of the Auriculas of the late Mr. Woodhead. In texture of foliage they almost resembled Echeverias. Such growth, we imagine, is practically unattainable in the lower situation and softer air in the neighbourhood of the metropolis; but the Auricula is fortunately a tractable and accommodating plant, and can be, and is, grown in splendid condition in the south of England.

Such plants as those annually staged by Mr. Douglas have never been surpassed, if equalled, for vigour. Some florists pay Mr. Douglas the compliment that he grows them too well. Be this as it may, he grows them well enough to win a full share of the honours, and it is unanimously conceded that every prize awarded to him is merited. By his admirable productions and his steady persevering labour in connection with that section of the National Auricula Society with which he is identified, he must be credited with having done more to popularise the Auricula in the southern districts of the kingdom than any other amateur cultivator of recent times.

The great Auricula emporium at Slough is fuller and richer than ever, Mr. Charles Turner abundantly maintaining the high position he has occupied so long both as a grower and raiser of these charmingly attractive flowers. The esteem in which this great florist is held appears to grow with the growth of his stocks and increase in intensity with their increasing numbers, and his sons who are able

coadjutors worthily share in the confidence reposed in the family by the floral world. Mr. Cannell, too, has found it necessary to apply his admitted energy to the production of Auriculas, which are now largely represented and receive solicitous attention in the "Home" at Swanley; while Mr. Dean continues raising and increasing his pretty laced varieties.

Evidently the Auricula constituency is a large one, and collections large and small must be forming in considerable numbers in various parts of the country. It is pleasant to feel that this is the case, because the plants are so well adapted for even the smallest gardens. There is probably no group of plants that can afford so much beauty in an equally small space. It is not easy to imagine that more beauty could be compressed into a plant so small yet so perfect as a first-class well-grown Auricula when in the full freshness of its peculiar charms. Symmetry, purity, bold contrasting, yet never violently clashing, colours are its predominating characteristics, and to these is to be added the great quality of being hardy or nearly so—an advantage that brings it within the cultural means of the million.

All the good qualities of the Auricula were well represented at the Southern Show of Tuesday last, and though more extensive displays have been seen, it may be taken as a good average exhibition both as to numbers and merit. The long-prevailing east winds had most injuriously checked some collections, and in certain northern districts flowers are only just opening. On the other hand, in the south the recent unusually hot weather had been equally unfavourable to many plants, especially those that were rather forward. Still, with these disadvantages the show provided general satisfaction. In some of the classes remarkably fine examples were contributed, and there was a most pleasing freshness throughout. The admired plant of the day was the Rev. F. D. Horner's premier, Greyhound, which a most experienced judge pronounced the model of what an Auricula should be. With well-developed but not coarse foliage, a stout strong truss of ten handsome pips, each smooth, substantial, and well placed, the plant was conspicuous amongst the other plants, fine as they were, with which their exhibitor secured chief honours in the class. In several other classes Mr. Horner's plants were also of notable quality, the beautiful varieties exciting the admiration of all and the envy of many.

There is always one portion of the Auricula Show which possesses considerable interest to lovers of hardy flowers—namely, that devoted to species and varieties of Primulas, and of these some good collections are usually contributed. It appears, however, very probable that in 1886 these classes will, under the auspices of the Royal Horticultural Society, be developed into an exhibition of some magnitude. The proposition is to hold a Primula Conference at the same time as the National Auricula Society's Southern Show, and endeavour to obtain as many representative species and varieties of the charming Primrose family as possible. One object of such a gathering would be to prove to the public the value of such as garden plants, and few are acquainted with their merits in that respect if the Polyanthuses and ordinary coloured Primroses be excepted. Another object is to afford an opportunity for discussing the peculiarities of Primulas in regard to culture, variableness, and other points, and that much of an interesting and instructive character would result from such a meeting could not be reasonably doubted. A Joint Committee of the Royal Horticultural and National Auricula Societies will, however, be appointed, and to them the arrangements will be entrusted.

The National Auricula Society has reached an important period in its history, and it is pleasant to be able to record that it is receiving substantial and increasing support. With a united Committee and energetic officers there is every reason to hope for a steady advance in popularity. The great object of the Society is to foster a love of a charming

race of plants which help to brighten many a home in crowded smoky cities and lighten the hearts of many weary toilers. Such an object is worthy of every encouragement that willing hands can give, and hundreds will join in wishing the Society substantial prosperity.

USEFUL WINTER-FLOWERING PLANTS.

EUPATORIUMS.—These are very useful where there is much furnishing to be done, especially if large plants are required, as good specimens can be obtained in a short time either from seed, cuttings, or division of the roots. I prefer cuttings, as plants struck in this way are not inclined to run so wild under my system of cultivation. The cuttings are inserted early in March. When rooted and strong enough they are potted into 60-sized pots and shifted to 5-inch pots as soon as necessary, which will be by the first week in May. During this time a warm border should be selected to receive the plants, and may be well enriched by good manure. The pots will be filled with roots by the first week in June, when the plants may be placed out 2 feet apart in the border prepared for them. Continually stop the shoots while in pots and when in their summer quarters until the middle of August. The plants will fill 8-inch pots by the time they are taken up, which should not be later than the second or third week in September. Cut round the roots with a sharp spade about ten days before being taken up, leaving a ball about the size of the pot which is to receive them. They should be potted very firmly and stood in a shady position out of doors until the time of housing early in October, although the longer they can remain out the better will be the result. They will begin flowering in November, and continue until the end of January. When flowering is finished they are cut back closely, and allowed to break previous to being shaken out, which is usually in March. The soil is shaken thoroughly away from the entangled roots, and then cut back, so that a 6-inch pot will hold them. These are placed out at the same time as the younger plants, but will require to be 5 feet apart, stopping as recommended before, when by the autumn these will make bushes 3 or 4 feet high and as much in diameter. The variety I prefer is *E. odoratum album*.

SALVIAS.—Very fine plants of these may be obtained in much the same manner as recommended for the Eupatoriums, only they must not be planted out quite so early, and will require more space. They may be fed liberally through the months of July and August, and these will require to be taken up a week or so earlier in the autumn, and need assistance after being established in their pots. More care will also be necessary in raising the plants, or the foliage of some will be lost. Some of the newer varieties I am not acquainted with, but the best I have found is *S. splendens* for early winter flowering. By the above treatment plants will attain a large size. I have had them 4 feet 6 inches high and 3 feet 6 inches in diameter. It is scarcely necessary to keep more than one or two plants after flowering for stock, as young plants are the best. This variety should be placed not later than the middle of September in a cool house, and if gradually brought into a stove heat as the winter advances should commence flowering about the commencement of November.

MARGUERITES.—The favourite Marguerites may be grown planted out with success, and if cuttings are struck in spring useful little plants in 60-sized pots will be obtained by the middle of May. An open situation should be chosen for the reception of these, allowing plenty of room. The soil does not require to be so rich for these plants. Ground where a crop has been taken, and manure employed for such as Lettuces or Spinach, will suit them admirably. Take care to pinch them in order to produce symmetry until the middle of August, when they will be showing flowers freely, and these should be removed until after the plants are thoroughly established in pots. Seven-inch pots will be large enough for the following season if the plants are potted firmly in strong soil. These should be plunged the following summer, and receive weak liquid manure during the growing season. Treat them in other respects similar to the young plants, keeping the flowers pinched out. They will also require abundance of water, and a cool house will suit them well, where they will continue flowering for a long time.

AGATHÆA CÆLESTIS.—A most useful plant for the production of flowers through the winter months and for table decoration. I have large plants that have been flowering since October. They are best to remain in pots, but must be liberally treated during the growing season, and every flower bud taken out until the end of October, when hundreds of useful little blue flowers will be produced that are most effective when used with the Yellow and White Marguerites.

SOLANUMS.—Several of these are noteworthy from their coloured berries, but *S. capsicastrum*, to which the following remarks refer, is especially useful. The first point is to obtain good seed, then sow in spring, and transfer the seedlings as soon as possible into pots singly

until a shift is required. Pots of the 48-size will be large enough for the plants this season, not allowing them to form berries the first year, but get all the wood obtainable. The plants are kept in a cold frame or pit through the winter, affording protection from frost. In February of the following year these will require cutting in closely, and when they begin starting into growth shake them out of the old soil and replace them into the same size pots. Keep them in a close frame until they are rooted into the fresh soil, then give more air. By the end of May these will have started well into growth, when a south border is chosen for their summer quarters. I plant them about three deep from the wall 18 inches apart each way in rich soil. This situation is preferred, as we get good berries in profusion. The first and second clusters of flowers must be selected, and these as soon as possible in the season, especially where plants are required for the autumn shows. After as many flowers are set as will furnish the plant I commence stopping and taking out all later flowers when for the above-mentioned purpose, in order that the berries may ripen as nearly as possible at one time. Much care is necessary in lifting and potting the Solanum, as the roots are very fibrous. When taken up place them into 5 or 6-inch pots, give plenty of water after potting, and make the soil very firm; then place them on a border after being in a shady position for a short time, to enable the plants to obtain a firm hold of the soil, which should be of a rather heavy texture, or the result will be loss of foliage. When housing the plants, if the berries are apparently not likely to be coloured by the time likely to be required, place them close to the front of a cool house, so that the plants may get all the sun possible, which is not too much in November. The time of housing is according to the ripeness of the berries. The earlier the berries are set, the longer the plants will remain outside or in cold frame or pit; and the later the plants remain outside the less likely are they to lose their foliage. As I remarked before this is a disadvantage. At all stages the Solanum is subject to green fly, but it can be easily checked in early growth by fumigating if in pots. When planted out a little guano sprinkled between the plants is a preventive, and answers as a manure. Another remedy is to dissolve softsoap in the proportions recommended for other softwooded plants, and add a small portion of sulphur.—J. PITHERS, *Summerhill*.

DUKE OF BUCCLEUCH GRAPE.

THERE can be no doubt that this Grape was sent out as an early Grape and recommended as such, as numerous paragraphs scattered throughout the horticultural papers testify; and Mr. Thomson's disclaimer on that head in your pages lately is the first of the kind that has appeared from the raisers and sellers of the Grape, and comes late after people have found out the fact for themselves. In confirmation of what I state it may be mentioned that in Mr. David Thomson's "Fruit Culture Under Glass" the Duke is recommended, for the earliest vineries, in the proportion of three to one to any other sort except the Black Hamburgh, also for early forcing in pots, pp. 69-67. As to the gimlet operation to prevent splitting, one would naturally expect the extra sap to run out at the hole made for its escape, but no one ever saw anything of the kind happen. Query—where does the by-flow run to?—A DUKE GROWER.

LAST year that fine Grape Duke of Buccleuch was ready for use about four weeks earlier than the Black Hamburgh and some other of that kind. The proprietors, who had not tasted that kind before, were agreeably surprised to find that such a fine Grape was in cultivation. They said that the flavour was most delicious, the berries were golden and large even for that "Goliath." Its value as a very early kind does not seem to be generally known.—C. H.

THOUGHTS ON CURRENT TOPICS.

To me, and presumably to many others, the most interesting topic of the time is the fresh ideas that have been advanced on the splitting of Grapes. I have had the subject under mental review for a very long period, and fully satisfied myself that the evil was certainly not in all cases traceable to a great influx of sap supplied by the roots. Mr. McIndoe's evidence on page 304 is so strikingly condemnatory of the ordinary notions on this subject that I suspect Mr. Thomson will find some little difficulty in disproving what is, in my view, a settled fact—that moisture passes from the atmosphere into the fruit and causes splitting.

ON a former occasion, when I was "positive that fruit will split, and does split, under the influence of atmospheric conditions alone," I had good grounds for the assertion. I have more than once cut Melons from frames in late autumn, and placed them on the shelf of a warm and moist plant stove to ripen, and they have split in all directions; but fruits placed on flower pots and stood on the hot-water pipes in the same houses remained sound. Tomatoes have been treated similarly with exactly the same results, and numbers of fruits have been totally spoiled by splitting after they had been removed from the plants more than a week. The juice did not ooze out of either the Melons or Tomatoes, but a thick white mould grew in the fissures, just as it does in cracked Grapes, but worse, and quite spoiled the fruit. It was those results, followed by experiments, that set me a-thinking, and eventually made me a convert of Dutrochet,

and a believer in the active principle of osmosis. I hesitated to declare my convictions because of the difficulty of accounting for the non-escape of the juice of the fruit through the fissures, but further observation has led to the conclusion that the cells are merely separated, the membranaceous walls not being ruptured.

I AM now convinced that whatever exceptions there may be to the contrary, either in Mr. Thomson's Grapes or any others, the main cause of the Grapes splitting is the transmission of moisture from the atmosphere through the cuticle of the fruit, and to the peculiar brittleness of the skins of certain varieties; but given moisture enough almost any varieties will split, and I cannot be alone in having witnessed the cracking of more than half the berries of outdoor Grapes when the fruit has been almost constantly wet in the autumn. I make no apology for dwelling on the subject, which is one of great practical importance, and is in my opinion worthy of being thought about closely by all growers of Grapes, and with them I leave it for the present.

I SHOULD not like your versatile correspondent "D., Deal," to imagine I intended to utter anything having the resemblance of a reproach on his habit of stating his failures. On the contrary, I believe it would be instructive if other writers were to be equally ready to publish their mishaps with the circumstances that led to them. I can only regret that "D., Deal," has so many obstacles to surmount, which do occasionally impart a melancholy tinge to some portions of his communications, though in other parts a little humour occasionally sputters from between the lines. I hope he will long continue to give us useful hints. I read every line he writes, and generally find something worth studying. He is a person of resource evidently, for on page 292 he tells us that when his *Lapagerias* "grew too large for their pots" he overcame the difficulty by "putting them into a box."

I HAVE duly noted what your correspondent says on *Freesias*, and intend trying them. I have rather held aloof from them, having seen some potsful of plants without flowers, and I cannot afford to peddle about with miffy plants. I wonder if "D., Deal," could induce his friend Mr. Tymons to detail his method of culture. I may add it was the writings of those gentlemen that enabled me to grow the gorgeous *Disa grandiflora*—the "Flower of the Gods," I think it is popularly called, and good varieties are certainly wonderfully rich and beautiful.

THERE is, however, another "wrinkle" which I think worthy of dragging out of the article under notice—namely, flowering *Doronicum austriacum* in pots in winter and spring. I can quite understand how welcome the bright yellow flowers must be, and I shall hope to see some of them grown as suggested. Shall I give a wrinkle in return? It will only be fair to do so. Possibly everybody does not know that Foxgloves force admirably and are very effective in a conservatory at the present time, also single and double *Pyrethrums*, *Delphiniums*, and the lovely blue *Spiderwort*, *Tradescantia virginica*. This is all I have to offer just now as a *quid pro quo*.

ANOTHER word on *Gladioli*. Like your Clonmel correspondent, "W. J. M.," I have had French and "Kelway" corms, and the latter were quite as satisfactory as the former, and the spikes even more massive; but sooner or later a number of the varieties of both lots "went off." By the way, the Clonmel notes often bothered me a little, and I fear I attributed their tone to the sanguine Irish temperament; but something more tangible is gathered from the paper of the President of the Meteorological Society (page 256) on the duration of sunshine in various parts of Great Britain and Ireland, in which it is stated "that in late autumn and winter Ireland is much sunnier than Great Britain." This, then, accounts for the ripening of the corms of "W. J. M.," and, I presume, his success with the fickle beauty. I thought in my ignorance that Ireland was foggy and misty with little sun; hence Peaches remained evergreen, as we were told, even under glass. It must be brighter at Clonmel, and I trust the success of your correspondent will be permanent.

I HAVE read with pleasure Mr. Jamieson's excellent and exhaustive paper on the "Peach and Nectarine," and note it now to direct prominent attention to one sentence particularly—namely, "I have for several years, when the trees have been in full bloom and the sun shining, given them a gentle syringing, and this is the best of all plans for setting the fruit." I have found this precisely as stated when the trees were flowering in bright sunny weather. Some years ago, in passing through a large Peach house, and hearing the gardener deplore the non-setting of the fruit, I requested him to try the syringe. He apparently thought something was the matter with me. The day was bright and the air still and dry. When he found I was serious, he allowed me to make an experiment. A portion of the trees was syringed obliquely across the trellis; there alone every blossom appeared to set, and much thinning was imperative, while on the great unsyringed portion there was not half a crop. If my friend reads these notes he will get to know who "Thinker" is, and is quite welcome to the information.

MR. SYMONS, I am glad to see, has figured his simple and useful rain gauge on page 275. I have used one of them for years, and have had pleasure in transmitting the results to "head quarters." It is an excellent contrivance, and an interesting addition to a garden, but should be attended to with strict regularity, or the records are worse than nothing. I contrived to make my gauge "pay," too, as it supplied

material for a few columns of matter for newspapers, which I had no difficulty in disposing of for a "consideration." I have been laughed at by a neighbour for "measuring rain," but he was not aware of the "method in my madness."

THERE is a very good hint in the communication of Messrs. Foster and Pearson on page 316 on painting hot-water pipes. The new joint appears to be good, but the point that I think merits the attention of gardeners is the reason given why so many pipes fail—namely, "letting them stand for months without working." I know that is true, because I have been a culprit, found out my error, and mended my ways. Let the hint be taken, for there is assuredly something in it.

IF records of bothy life were compiled there would be some curious remembrances. I remember a bothy on one of the walls of which were a number of horizontal marks at heights ranging from 4 feet 1 inch to 6 feet 2 inches. These represented the altitudes of the occupants, and the stretching that occurred in one endeavouring to overtop the other was not a little amusing. On another wall the marks were vertical. These represented the stretch of the arms, and the straining that was endured as with chests flattened and fingers outstretched to overreach another's marks was almost agonising. I thought of these efforts when reading of the trade greatness that has been evolved by sixpenny telegrams, and when I read the note on page 307 I could not help wondering what the Jones's had done amiss to be left out of the reckoning. I like to see enterprise in everything wholesome; we have it in play in the bothies, in trade, and the great seed firms and nurseries in this country are monuments of industrial life.

AND now I must acknowledge the letter of Mr. Iggulden, lest he should think me discourteous. If I have made an "unfair" use of the Essex statistics I am sorry, as I did not intend to do so. I can well afford to withdraw all that part of the subject, and even to throw in Essex and its excellencies into his scale against myself. I will, therefore, give him Essex and take Kent, where the land has been marvellously improved of late years by deep cultivation; also I would desire to place on record what I have reason to believe is a fact—that the finest hardy fruit grown in England is from trenched land, not "subsoiled" merely, but trenched in the manner that has been so ably denounced. This is a mere skirmish, however, and I must now attack my doughty opponent's main fortifications.

A FEINT is often useful in war, and we shall see in a moment whether in "twice mentioning Mr. Gilbert" I have "invoked a powerful witness against myself." The fact is, Mr. Iggulden has allowed me to tempt him into a *cul de sac*. The case now stands thus: If Mr. Gilbert has not trenched the garden at Burghley my opponent is the victor, and I shall hand him my sword—pen. If he has trenched that fertile garden the case is slightly different. Bearing in mind the advice not to "draw on my imagination" I will just state two facts. The first is that the Burghley Garden is one of the best and most systematically trenched gardens in Britain, the best portion of it being trenched the deepest—(neither Mr. Gilbert, Mr. Temple, nor any other good gardener trenches the same ground every year)—and hence its great productiveness. I know this is so, because I have seen the trenching in progress, and Mr. Gilbert has told me it is the secret of his success. So much for the Burghley stronghold. The next fact is of a general nature, but not less striking as showing the enormous advantages of deep over shallow cultivation in contributing to the earth's productiveness. The gardens of this country are worked to more than twice the depth of the land devoted to farming, and the former are immeasurably and beyond all comparison the more productive because of—the trenching. Whatever local exceptions may be adduced and examples of abuse in trenching shown, the great fact remains firm and unmoveable that deep cultivation has powerfully increased the fertility of the soil, and if all the gardens in the kingdom had only been dug a "spade deep" they would not be nearly so productive as they are to-day. That is all at present from—A THINKER.

IN THE GARDEN.

HOSE-IN-HOSE POLYANTHUSES.—I am extremely fond of these. Granted they are abnormalities, but none the less, in my opinion, they are desirable. The following are flowering with me now:—White, pale yellow, orange-yellow, gold laced, crimson, amaranth, and what I take to be King of Hose-in-hose. It is a laced variety, with the calyx lobes foliage-like, similar to Jack in the Green. The white, orange-yellow, and crimson are very free and showy; all the rest are pretty, and particularly interesting. The crimson is apparently very scarce; my plants come from Ireland, the home of so many remarkable and scarce plants. King of Hose-in-hose is also striking. A gold-laced variety I have is similar, but without the foliaceous calyx. In association with these is Jack in the Green, known also as the "Priest in his Boots" and "Pantaloons;" there are two or three forms of it, varying in colour and the arrangement of the large leafy calyx divisions. There is one called Galligaskins, which I take to be a form of Jack. I have received it from two Irish localities and from Lincolnshire. The old Rex Theodore Polyanthus is a gem, with its very duplex flowers opening a rich

maroon, changing almost to black. How seldom we see it! perhaps it is because it will not thrive happily everywhere. My plants are looking right well.

DOUBLE PRIMROSES—These are an equally interesting series of plants, but unfortunately they will not thrive everywhere, unless with some patience and attention as to the kind of soil used. Most of them like a good strong loamy soil enriched with manure, they will do in light soils provided they are fed well. The old double crimson or Pompadour is, however, an exception as far as my experience goes. Manure seems to be poison to it unless in an absolutely decayed condition; plenty of grit and leaf soil suits it, freedom from hot sunshine, and protection from severe frosts. There are numbers of varieties. Take the sulphurs and yellows as an example. There is the early and late sulphur; the latter is the largest, and rather deeper in colour, and I do not distinguish between it and what is sold as Giant and Giantess. I have dropped these names. Cloth of Gold is a rich lemon yellow, very double and rather late, quite distinct from the rest. Golden Gem, received from Ireland, is earlier, of the same form as the early sulphur, but deeper in colour, and the foliage is broader and much more wrinkled. Of purples there are three forms. One is known to me as Scotch, it is reddish purple yellowish at the base, and slightly tipped white, it is frequently called Ruby. The ordinary purple is rich lake purple, with a strong inclination to become single. Another is rich crimson purple, most likely the same as *Amaranthina fl.-pl.*; with these one may class what is usually called double lilac, it is pale and very free, one of the best for general cultivation; also the two *Polyanthus*-like varieties named *platypeta*'a *plena* (syn. *Arthur Demoulin*) and *Crousei plena*. Both produce strong trusses of conspicuous flowers, are extremely showy when in first-rate condition; they delight in strong loam. *Crousei plena* is yet but little known. At Morrison Bros. of Aberdeen it thrives amazingly, the flowers are very large rich rose-purple, faintly edged with white, just double enough to look comfortable. The white-flowered forms vary but little as far as I can judge. There are two or three forms of rose; one rich salmon-rose, vigorous and free, but scarce; another called Bronze Pink is a dull rose, bronze-shaded, very scarce, apparently more abundant in Ireland than elsewhere. The double blush is exceedingly pretty, very floriferous, and large. I received this from Rodger McClelland & Co. of Newry. Can any of the Hibernian readers of the *Journal* enlighten one as to the existence of a variety which formerly existed in Ireland under the name of Sapphire? I should much like to hear of it. Then there is the old double crimson or Pompadour, a gem rich and scarce, flowering well only under careful treatment, and best in a damp mild climate. A fair correspondent from the South Wales coast just writes—"My double crimson Primrose is crowded with flowers outside." How fortunate to live in such a climate, for it means a multitude of other garden joys.

PLANTING HYBRID GLADIOLI.—I have just finished this work (April 2nd), being fully convinced they should be beneath the surface ere this as a general rule. Of course much depends on soil and situation. Remembering their progenitors and the place of their nativity, one is forced to the conclusion that it is impossible to give advice all round. In some gardens they can never be perpetuated. In heavy soils late planting is advisable, and the corms should not be more than 2 inches deep, well seated, and covered with sand. In light soils with a sunny position I strongly advise planting at least 4 inches deep, or they are liable to suffer from excessive sun heat during dry weather. My soil is light and well drained. I have planted all the corms 4 inches deep, dug the ground two spits deep, and arranged the manure beneath them, but not in contact with them, some soil being placed between; instead of placing sand about them, ashes from burnt garden refuse has served the same purpose. Every corm was carefully examined for signs of the disease, for you may detect the black spots, also look out for corms which never started last year, but through oversight were lifted and put in with the rest. I agree with "*D., Deal*," that continental corms are the best.

PLANTING CARNATIONS AND PICOTEES.—I have just put the last of these in their flowering quarters (April 3rd)—viz., the yellow ground varieties. It is advisable to leave these till last, as most of them are less vigorous than the other sections, and the warmest and most efficiently drained position is assigned them. My stock is not large, so I have bestowed extra pains upon them, but am sorry not to have secured Turner's Lady Rosebery, it appears to be extremely scarce. Florence and Mrs Lazenby are both first-class varieties, and I have a pure yellow self raised from seed which is as good as any. The self Carnations are my favourites, with strong constitutions. Rich

pinks, glowing scarlets, intense crimson, whites, blush, &c., make a garden gay, and are far more effective when cut than the bizarres and flakes, however much we may esteem them as aristocratic florist's flowers. All my stock plants were stored in a small low frame under a south wall; they were planted in the frame when removed from the stools last autumn, and they are right healthy, strong, and well rooted. Those near the wall have once received water since they were planted. I am so satisfied with this plan of wintering that it will be a future arrangement with me. They lift with excellent balls of soil, and are transferred to beds or borders without feeling any check, whereas if they root freely in small pots a certain amount of cramping is unavoidable.—T.

NEWCASTLE-ON-TYNE FLOWER SHOW.

THE Durham, Northumberland, and Newcastle-on-Tyne Horticultural and Botanical Society held their spring Exhibition in the Town Hall and Corn Exchange on Wednesday and Thursday last week, in favourable weather, the exhibits being of superior quality. The active Committee and the Secretary, Mr. Thomas Gillespie, ever on the alert for improvement, arranged the exhibits this year somewhat differently from former years. The Hyacinths, which generally form the most conspicuous attraction of the spring flowers, have hitherto been arranged upon long tables in the centre of the Exchange; this year they were placed on the western side, slightly elevated, and the Cinerarias took their place. The advantage of this arrangement was more effectively seen from the top of the stairs which leads from the Corn Exchange. The observer had there a full view of the entire exhibits.

The plants were numerous, and were wonderful examples of the cultivators' skill. Especially might be mentioned those of Mr. F. C. Ford, whose fine plant of *Rhododendron Veitchianum* 5 feet through with its large globular creamy white blooms attracted general attention. The exhibits of the Darlington gardeners were, on the whole, excellent in Azaleas and Cinerarias, showing that the Quaker town has lost none of its prestige. The local exhibitors were also good. *Dendrobium nobile* and *Imantophyllums* *superbum* and *miniatum*, the former with fourteen growths, the latter with twenty-eight spikes, from Mr. Methven were highly commendable to his skill as a cultivator, while the Hyacinths exhibited by Mr. Jos. Watson were of great merit. Mr. Dewar, Gray Street, was also well to the front this year with Hyacinths.

In the A division, which is open to all, the Society offer £5, £3, £2, and £1. In this class there were four competitors. Mr. F. C. Ford, gardener to Mrs. H. Pease, Pierremont Hall, Darlington, was first with a superb *Rhododendron Veitchianum* 5 feet through, a perfect mass of its large globular cream and white flowers. *Genetyllis tulipifera* and an excellent *Erica Victoria*, with a *Tremandra ericoides*, completed the four to which the Judges awarded the premier honours. Mr. A. Methven, gardener to E. Lange, Esq., Heathfield House, Low Fell, was second. He had *Imantophyllum superbum* and *Aitoni*, *Azalea Duc de Nassau*, and an excellent *Dendrobium nobile*. Mr. Noble, gardener to Theo. Fry, Esq., Woodside, Darlington, was third, and Mr. Neil Black, gardener to the Misses Pease, South End, Darlington, fourth. In his stand was a *Vanda suavis* with thirteen spikes averaging nine flowers each.

With four *Azalea indica* Mr. Ford followed up his previous success. His plants were well bloomed, not too much trained, but natural, the varieties being Mr. Wm. Ball, *Duc de Nassau*, *Roi d'Holland*, and *Edward de Vos*. Mr. Methven also occupied his previous position. He had *Louis Van Baden*, *Duc de Nassau*, and *Model*; Mr. Short, Hamersknott, Darlington, being third. *Deutzias* were well shown, Mr. W. R. Armstrong, florist, Benwell, being first. *Genistas* also formed a good feature, Mr. J. Wood, gardener to H. N. Middleton, Esq., Fenham Hall, being first. *Cinerarias* were quite up to those of former years, Mr. M. J. Blackwood, gardener to A. McDonald, Esq., Saltwell Hall, leading; Mr. Watson being first with *Lily of the Valley*, which was unusually good. For *Scillas* and hardy *Primulas* Mr. W. L. Thompson, gardener to Captain Bell, Wolsington Park, was first. Table plants were as usual very commendable, Mr. J. McIntyre, gardener to Mrs. J. Pease, Darlington, being first with *Pandanus Veitchii*, *Dracæna superba*, *Croton reticulatus*, *Cocos Weddelliana*, and *Dracæna gracilis*. Mr. McIntyre has also exhibited—not for competition—six pots of *Vicomtesse Hericart de Thury* Strawberry, which had over a dozen good berries each.

Auriculas were excellent, and showed a great improvement as compared with former years. For twelve *Auriculas* nine varieties, Alpines excluded, Mr. W. H. White, Killingworth, was first, his best flowers being *Sapphire*, *Frank Simonite*, *C. J. Perry*, and *Acme*. Mr. Edward Adams, Swalwell, was second, his best flowers being *Frank Simonite*, *General Havelock*, and *Lord Lorne*. For six dissimilar varieties, the same as above, Mr. Alfred Holmes, Manchester, led with *Pizarro*, *Tam o'Shanter*, and *Frank Simonite*; and for four dissimilar Mr. W. L. Thompson was first. For the twelve Alpines the latter exhibitor was also first. The best flowers were *Godfrey*, *Diadem*, *Colonel Scott*, *King of the Belgians*, *Mercury*, *Sensation*, and *Mr. Ball*. For six *Polyanthuses*, gold-laced, Mr. Stobbs, Winlaton, was first. The flowers were *George IV.*, *Queen of Tyne*, and *William IV.* Mr. Thomas Battensby, Hogg Hill, was first for six other than gold-laced. For six pots of *Polyanthuses* the same exhibitors were placed in the same respective positions.

Cut Flowers and Table Decoration.—For twelve *Camellia* blooms Mr. F. C. Ford was first, and Mr. W. L. Thompson second. The former had Mrs. H. Pease, *Chandeleri elegans*, *Cup of Beauty*, *Imbricata*, and *Indica rubra*. With twelve *Rhododendron* bunches Mr. F. C. Ford was again first, showing fine examples of *Countess of Haddington*, *Princess Royal*, and *Jasminiflorum*. For twelve bunches of Azaleas Mr. Short was first, and Mr. Neil Black second. The former had splendid blooms of *Phœbus*, *Sigismund Kerchove*, *Magnificent*, *Empress of India*, *Madame Van de Cruyson*. With twelve Rose blooms Mr. Jas. Wright, Newcastle, was first, having large and superior blooms of *Maréchal Neil*; Mr. Wm. Bushby, gardener

to J. W. Pease, Esq., Pendower, being second. For twelve Pansies, dissimilar, and for twelve Fancy varieties Mr. J. Cawthorne, Windy Hill, and Mr. Thomas Battensby, were the chief winners. Epergnes and bouquets were as usual arranged on a table in the centre of the hall, and formed a most striking feature of the Show.

Hyacinths.—These, as has been already mentioned, were arranged on the western side of the Corn Exchange, and extended the whole length of the building, formed an imposing array. The premier honours for twenty-four, not less than twelve varieties, was most deservedly won by Mr. Watson, that gentleman having now, we believe, occupied the same position for several years. His best and telling spikes were Von Schiller, Grandeur à Merveille and L'Or d'Australie. The flowers were all rich in colour, full

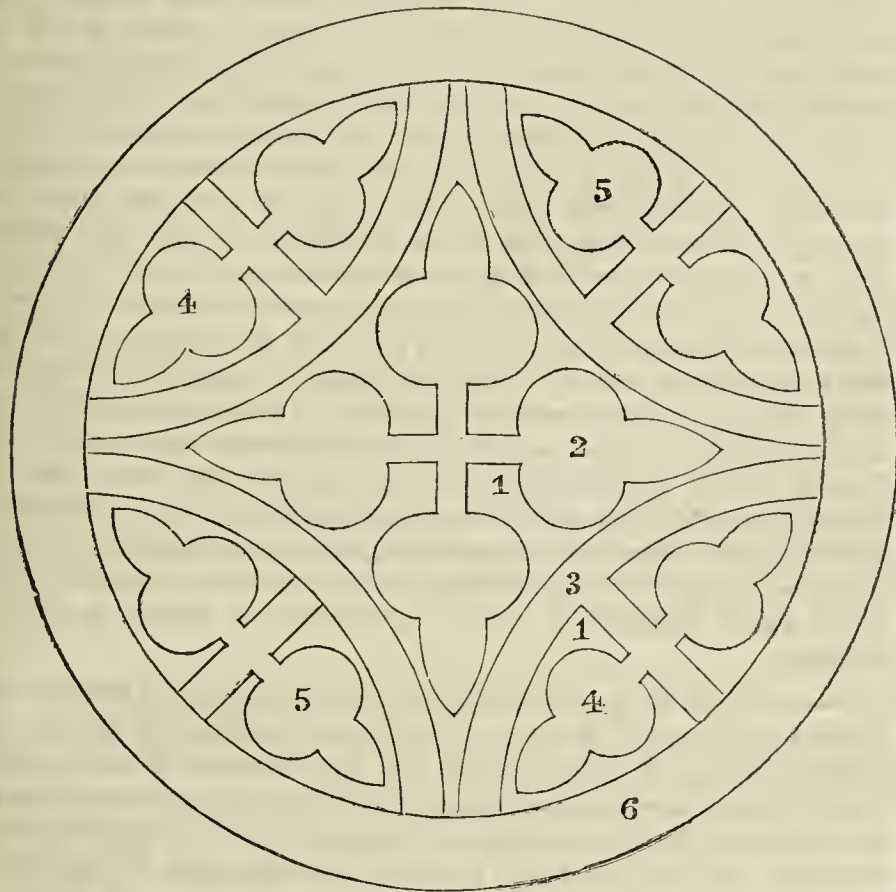


Fig. 58.

1. Groundwork of *Mesembryanthemum cordifolium variegatum*; 2. *Alternanthera amœna*; 3. *Iresine Walslii* pegged down; 4. *Alternanthera paronychioides major*; 5. *Alternanthera aurea*; 6. Two rows of *Echeveria secunda glauca* and a little *Sedum glaucum* between.

blown, and beautiful, backed with excellent foliage. Mr. A. Kerr, Kelso was second, his best flowers being Czar Peter, Grandeur à Merville, Grand Vidette, and La Grandesse. Mr. Henry Dewar, Grey Street, Newcastle, was third. For twelve singles in pots, Mr. Watson followed up his former success with similar flowers to those in his twenty-four. Mr. Henry Dewar was second; and for nine pots of single Tulips Mr. Watson was again first, the varieties were White Van Vondell, Pottebaker, Fabiola, Vermilion Brilliant, and Keyzers Kroon. For six pots of Tulips the same exhibitor was again first, Mr. W. L. Thompson being second.

For the best arranged epergne Mr. T. Rutherford, Durham, was first with a very tasteful arrangement, his upper tier consisting of *Begonia Regina*, *Masdevallias*, *Spiræas*, the base of *Amaryllis*, *Callas*, *Masdevallias*, *Dendrobiums*, and the whole lightened with the usual *Davallia Mooreana*. Mr. D. Thompson, South Hill, was second with an effective epergne. For a bridal bouquet Mr. Chard, Clapham, London, was first. His arrangement was good, consisting of *Gardenias*, *Spiræas*, *Lilies of the Valley*, and *Tuberoses*. Mr. J. Rutherford was second. For a hand bouquet Mr. F. C. Ford was first. It was superb in outline, *Phalænopsids* and *Oncidiums* and *Bouvardias* being all employed with much skill and taste. For the buttonhole bouquet Mr. George Corbett was first with a neat arrangement, consisting of *Spiræas*, blue *Hepatica*, and a small *Tea Rose*.

In the B division many of the exhibitors were the same as in the A. For the *Azaleas* Mr. McIntyre was first; for the *Deutzias*, Mr. Ford; for *Spiræas*, Mr. Noble; for *Cinerarias*, Mr. Forsyth; for *Primulas* and *Cyclamens*, Mr. F. C. Ford and Mr. McIntyre were first in the order named. For *Lily of the Valley*, first Mr. Short; for twelve *Hyacinths*, Mr. J. Wood and Mr. A. J. Brown, Whitburn, in the order named. For the epergnes and bouquets Mr. Methven and Mr. McIntyre were the respective winners.

Not for competition were an excellent collection of Japanese Maples by Messrs. Smith, Worcester; exhibited by their well-known representative, Mr. Petch, consisting of *septemlobum elegans*, *palmatifidum ornatum*, *dissectum tinctum*, *septemlobum tinctum*, and *polymorphum flavescens*. There were also two tall plants of the *Azalea Chabreyeri*, and *Clematises indivisa lobata* (evergreen), *Lady Londesborough*, Mrs. Quilter, Samuel Moulson, and George Jackman. These were all much admired, and we were informed had been nearly all purchased by Lady Armstrong, Jesmond Dene, so much was her ladyship pleased with them. Messrs. W. Fell & Co., Wentworth Nurseries, Hexham, had also an excellent collection of hardy *Coniferæ* in pots.

It is hoped the fine weather will have caused the receipts to be considerably above that of last year, and thus encourage the Council in their earnest efforts to make the Exhibition second to none in the kingdom. Those who remember what the first spring Exhibition was eight years ago will admit that the Council have realised more than the most sanguine

person interested in the Exhibition could desire, and against difficulties innumerable.

CARPET BEDS.

IN the woodcuts (figs. 58 and 59) we give our readers two more carpet bed designs from Mr. Graham of Hampton Court. The beds should be raised 5 or 6 inches above the surrounding ground, and the *Echeverias* and *Sedum* put in the sides to keep up the soil and serve as a button-like border to the bed. Our readers must also remember that the arrangements given here are only suggestive, and can be altered according to taste or the plants available. In either of these two beds *Herniaria glabra* could be used as a groundwork in place of the *Mesembryanthemum*, and as it is perfectly hardy would reduce expense, but we think the *Mesembryanthemum* is very rich and distinct for groundwork or lining out figures.

CAMELLIAS IN SPRING.

OUR first *Camellias* began flowering last November, and we have still blooms opening, but they will soon be over now, and the chief question is to ensure a free development of young shoots as soon as possible. Early blooming will never follow on late imperfect growth, and the sooner all plants are in free and luxuriant growth the better. Plants in pots with the drainage in a bad state should be turned out, and either repotted, or at least have drainage put right. This is of the utmost importance. No *Camellia* will ever grow well with poor or useless drainage at the bottom of the pot. Repotting should depend on the state of the roots and soil. If these are healthy we would not advise repotting. If the soil is overrun with worms, a few roots here and none there, we would shake the soil off and repot carefully in a mixture of rough sand, peat, and a few pieces of old fibrous loam.

Poor roots and bad rooting material may sometimes produce fairly good young shoots, and the plants may appear all right, but it is not always at wood-forming time that deficiencies at the root show themselves, but more often when the buds are formed and expected to open, but they fail to do so and fall. This is the greatest annoyance any *Camellia* grower can experience, and poor roots are the cause of three parts of the bulbs falling prematurely. The evil may be rectified now, but it cannot later on. Indeed, this is the only time of the year *Camellias* will bear having their roots disturbed. Planted-out bushes are not, as a rule, so light to get out of order at the roots, but where they are in a bad state try and add to or rectify the drainage, and put some sweet new soil to the roots. *Camellias* which grow extra strongly often make too much wood, and become a thick mass of branches, but it is not good for them to be like this.

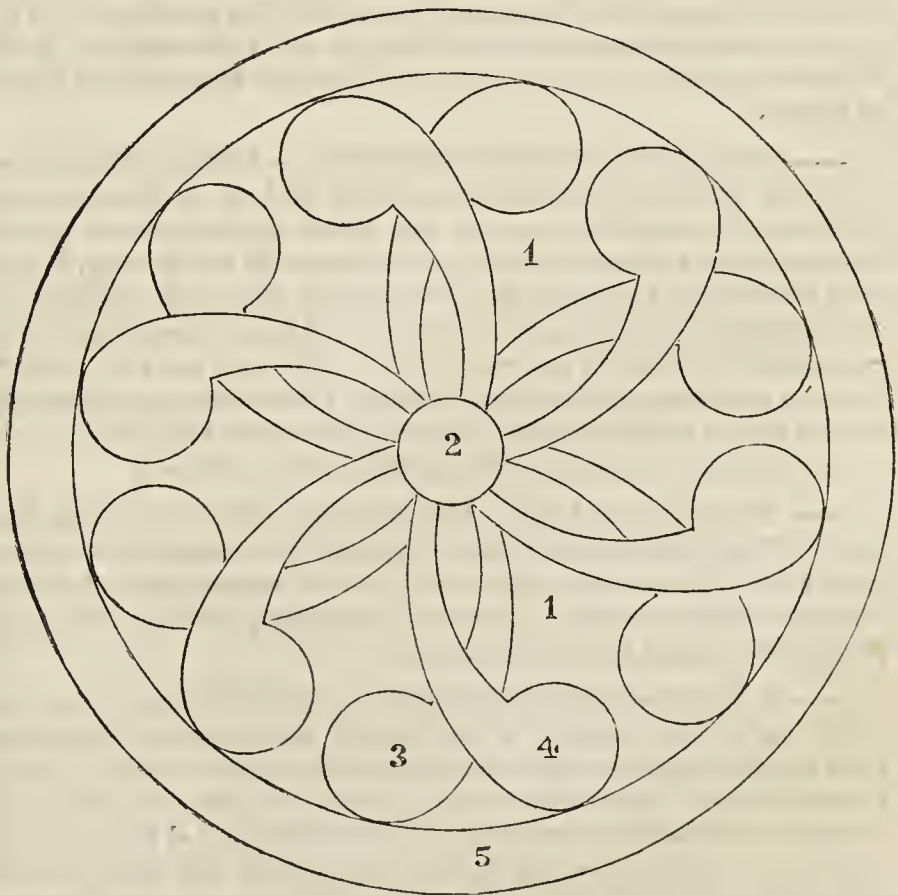


Fig. 59.

1. *Mesembryanthemum cordifolium variegatum*; 2. *Echeveria Peacockii*; 3. *Alternanthera versicolor grandis*; 4. *Alternanthera aurea*; 5. Two rows of *Echeveria secunda glauca*, and a little *Sedum glaucum* between.

When cutting out or thinning the branches has to be done the spring is the time to do it, but anything like cutting them in to a level surface should never be practised. Those which are crowding should be cut out, and the others left will gain strength. When in bloom *Camellias* cannot be syringed so often, as they require to keep them clean, but when they have ceased flowering they should be syringed twice daily at least. We find our plants are not very liable to become infested with insects, but a kind

of black matter collects on the leaves, and this should all be cleared off when growth begins at this season. Our plants are too large and numerous to allow us to sponge the leaves, but we clean them well by mixing a wineglassful of petroleum and 1 oz. of washing soda with each gallon of water for syringing, and this clears everything before it. The trees are first syringed with clean water, and then this mixture is put on, and after the lapse of ten minutes or so it is again syringed off. Anyone with dirty-leaved Camellias can clean them speedily in this way.—M. M.



A BOX of ORCHID FLOWERS from Dr. Paterson, Bridge of Allan, contains some handsome specimens. *Cymbidium Lowianum* has a raceme 3 feet long, and bearing twenty-four flowers, *Odontoglossum triumphans* having twenty-eight flowers. Of *Odontoglossum Uro-Skinneri* a spike was sent, 4 feet long, which has had thirty-two flowers, and been in bloom over twelve months. With these also came flowers of *Sarracenia Drummondii* and *Patersonii*, both particularly fine. The last-named is a hybrid between *S. purpurea* and *S. Drummondii*, and has exceedingly rich dark red flowers, the preceding one being pale yellow. Their fresh vigorous condition proves how well Dr. Paterson grows the plants in his snug Stirling garden.

— A CORRESPONDENT writes:—"W. N." says in his article on WATERING PLANTS that we have more moisture as a rule in winter than in summer. If by moisture he means rain he is in error; the average rainfall from April to September inclusive is 13.23 inches; the rest of the year only 12.19 inches. But we certainly may call March a month when vegetation is active, and if we add its rainfall to that of the other six months we get—Rainfall in 'growing' months, 14.78 inches; in 'rest' months, 10.64 inches."

— A PAMPHLET of twenty-six pages entitled "CHRYSANTHEMUMS AND THEIR CULTURE" by Mr. John Bradner of the Arley Hill Nursery, Bristol, has recently been issued, and gives a brief but practical review of the culture of Chrysanthemums for exhibition and conservatories. Lists of varieties are also given, but these are not quite so satisfactory as might be desired.

— ROSES AND MR. BARDNEY'S INSECTICIDE.—A correspondent writes to us from Wales:—"I am afraid you will be tired of me troubling you with Roses, but having seen one or two letters in your valuable paper condemning the soft soap solution as recommended by Mr. Bardney, I send you a few blooms of different Tea Roses which have been subjected to that treatment, and perhaps you will kindly tell your correspondent if it has injured the blooms in any way.—F. B."—[We shall never be "tired" of seeing such Roses as those sent—beautiful bright foliage, and charming spotless blooms similar to others we have seen on more than one occasion in the Rose house in charge of Mr. Bardney at Norris Green.]

— THE EALING, ACTON, AND HANWELL HORTICULTURAL SOCIETY will hold their summer Show this year in the grounds of Gunnersbury Park, Ealing, on July 7th and 8th, and the autumn Show of flowers, fruits, and vegetables at the Lyric Hall, Broadway, Ealing. Numerous prizes will be offered at each Exhibition.

— A CORRESPONDENT remarks that—"The interesting discussion which has of late appeared in the pages of the Journal on TRENCHING LAND illustrates the fact that cultivators may appear to be widely opposed to each other in their practice, when in reality they are not. Referring to the case of Mr. Gilbert, who says he has trenched a deal in years gone by, but not so now. The fact is, he is now reaping the benefit of his past labours, and when the surface and subsoil are so thoroughly amalgamated as they are at Burleigh, little trenching or even digging is necessary. We learn from two gardeners now in first-class positions, who were foremen under a predecessor of Mr. Gilbert, that excessive trenching was carried on at Burleigh for many years."

— THE SHROPSHIRE FLORAL AND HORTICULTURAL SOCIETY will hold their summer Show in Shrewsbury on August 19th and 20th, liberal prizes being offered in the majority of the classes. Classes 1 to 98 are open to all England on the payment of a small entry fee, and the remain-

ing classes—namely, from 99 to 146—are confined to cottagers in the county.

— THE sixth edition of Mr. William Paul's treatise "ROSES IN POTS" (Kent & Co., 23, Paternoster Row), is just to hand, and the fact that five large editions have been exhausted is a sufficient indication of its merits. It has also been translated into French and German. The edition now being noticed is, like its predecessors, distinguished by good paper, clear type, and neat binding.

— MR. F. W. BURBIDGE recently delivered a lecture upon "WINDOW GARDENING" at the Rathmines Town Hall, Dublin. The two points in the lecture were—first, that dépôts or stores should be established by Kyrle, sanitary, and other benevolent societies, whereat artisans and others could see suitable window plants, and purchase seeds, soil, &c., at a cheap rate; secondly, that the authorities concerned in the construction of model or artisans' dwellings should instruct the architect to design "window boxes"—i.e., a receptacle for earth and plants, in masonry. The ordinary window box is, after all, a makeshift at the best, and obstructs the light of the lower windowpane and looks unsightly from within, whereas if a proper receptacle be made its top will be level with the bottom of the lowest pane, and the plants only will be seen from the room within. These two points, if carried out, would do much more to encourage window gardening. The Rev. Canon Bagot, in moving a vote of thanks, said that when he visited London, as he had done on several occasions with excursionists from the rural parts of Ireland, the things that most struck these people was the cleanliness of the city and the extent to which gardening was carried on in it. Children ought to be taught to take an interest in the cultivation of flowers. He would gladly subscribe in order to give prizes for flowers grown by children.

— "T. W. S." sends the following note respecting the ORCHIDS IN FLOWER AT OLDFIELD, BICKLEY: "The choice collection of Orchids at Oldfield has been so well described in a previous issue of the Journal that it is unnecessary for me to do more than briefly call attention to a few of the most important that were in flower at the time of my visit a few days ago. In the cool house I noticed *Odontoglossum Wilckeanum*, *Pescatorei*, *guttatum*, *triumphans*, *cordatum*, and *crispum* in flower. There was one very fine variety of the latter which promises to become valuable. A splendid plant of *O. macranthum* was carrying flower spikes about 12 feet long. In the large house *Saccolabium ampullaceum* had two splendid racemes, as also were *Vanda Parishii*, *V. Marriotiana*, *V. tricolor insignis*, and *V. suavis*. *Cattleya gigas* was carrying immense flowers, one of which measured 3 inches across the lip and 9 inches in diameter across the petals. *Cymbidium Lowianum* was flowering freely, as also were *Epidendrum Wallisi* and the curious *Maxillaria Turneri*. *Phaius Wallichii* and several *Cypripediums* were in flower. Very healthy indeed were the plants of *Phalaenopsis*. These, it will be remembered, were figured in a recent number of the Journal. Mr. Heims seems to be specially successful with the latter class of Orchids. The whole of the collection was in splendid condition."

— MR. JOHNSTON, the traveller in Africa, has thus described in a daily contemporary some of the VEGETATION AT KILIMANJARO which he observed in his second ascent:—"Starting at 9, I walked upwards, with few stoppages, until 1.30. At first we crossed grassy undulating hillocks, the road being fairly easy. Then we entered a heathy tract, scorched and burnt with recent bush fires, but higher up, where the blaze had not reached, the vegetation was fairly abundant and green. Small pink Irises studded the ground in numbers; an occasional *Gladiolus* of a vivid crimson gleamed brightly out from the tufted grass. About 12,600 feet we struck a pretty little stream, flowing S.S.W., and lower down carving its way through a tremendous ravine, the sides of which were clothed with thick vegetation and gaily lit up with the brilliant red-leaf shoots of the *Protea* (*Protea abyssinica*) shrub. At the place where we crossed the stream the banks were shelving, and above the little ford the water fell in pretty cascades through a rift in the higher ridge of rock. About this spot the surrounding scenery had lost much of its accustomed asperity. On the further side of the stream was a patch of level greensward, somewhat spoilt by the buffaloes who came thither to drink and sport, and who had rucked up and befouled much of this little natural lawn. Strange sessile Thistles grew here, nearly 5 feet in circumference, belonging, I believe, to the genus *Carduus*, also an extraordinary *Lobelia* (*Lobelia Deckeni*), 3 to 4 feet in height, with a Teazle-like crown of silvery green bracts and bright blue blossoms. Other

remarkable plants were the lovely *Cynoglossum amplifolium*, with rich ultramarine flowers, and an extraordinary arborescent plant, since named *Senecio Johnstoni*, looking somewhat like a Banana in the distance, but in reality consisting of a tall, black, smooth trunk, 20 to 30 feet in height, and surmounted by a huge crown of broad leaves interspersed or headed up with bunches of yellow blossom. This strange plant grew abundantly in the streamlet's bed, and its trunk was so superficially rooted and so rotten that, in spite of its height and girth, I could pull it down with one hand."

GRAPES CRACKING.

JUST a few more lines anent this question and I have done with it.

Mr. McIndoe quotes from my book on the Vine to show that when there is an excess of sap sent into Grapes they burst and the sap drips from them, and, therefore, excess of sap is not the cause of the splitting of the Duke, because no sap drops from it when it bursts.

I hope Mr. McIndoe will on reflection see that there is not the smallest analogy between the two cases. In that referred to in my book they were the Grapes of the previous season, hanging on Vines just bursting their buds in April. The berries had no assimilating powers, and the sap was crude, just as it came up from the roots, and entered the berries as it would enter a bladder and burst it if fixed on a part of the Vine recently cut. This case has almost nothing in common with a Vine in full leaf and berries not yet ripe with full assimilating powers. For the sake of experiment I nearly cut the laterals through between the bunches and the main stem of the Vine. From these wounds the sap dripped rapidly, and such berries as were not already split remained whole.

The cracking of the Grapes in the tent at Manchester may possibly be accounted for by the great heat they were subjected to, causing the fluids they contained to expand, so as to cause their skins, already sorely tried, to give way. This is a more likely theory than that their skins, glutton like, of their own free will absorbed more moisture than they could contain.

When the Royal Horticultural Society held a great provincial show at Leicester the day was excessively hot, as many will remember—91° in the shade. Dr. Hogg and I judged fruit in a very hot tent, and vegetables in a bell-shaped tent, where the temperature was 110°, and I can conceive that such a temperature might so expand fluids as to make the skin of a Grape already under great tension give way.

Notwithstanding what Mr. McIndoe says of the gimlet, I shall, with many others, have recourse to it, proving as it does a perfect remedy for Grape-cracking.—W. THOMSON.

ROYAL METEOROLOGICAL SOCIETY.

THE usual monthly meeting of this Society was held on Wednesday evening, the 15th inst., at the Institution of Civil Engineers, 25, Great George Street, Westminster, Mr. R. H. Scott, F.R.S., President, in the chair, when the following papers were read:—

1, "Report of Committee on Decrease of Water Supply." This Committee was appointed to take into consideration the question of the decrease of water in springs, streams, and rivers, and also the simultaneous rise of the flood level in cultivated countries. As far as any inference can be drawn from the records collected by the Committee it appears that the years 1820, 1821, 1824, 1835, 1838, 1845, 1847, 1850, 1854, 1855, 1858, 1859, 1864, 1865, 1871, 1874, 1875, and 1884 have been periods of marked low water. On the other hand, the years 1817, 1825, 1830, 1836, 1841, 1842, 1853, 1860, 1861, 1866, 1873, 1877, 1879, 1881, and 1883, have been periods when there has been exceptionally high water. In 1852 the water was very low in the early part of the year, while at the end of the year it was very high. In the intervening periods the water has been of moderate altitude. It does not appear from existing records that there is any diminution in the water supply of this country, and the large quantity of water which has been stored or has flowed off the ground between 1876 and 1884 is confirmatory of this view. There appear, however, to be periods when there is exceptionally low water, and these are almost immediately followed by periods of exceptionally high water. With reference to the increase of floods, it does not appear from the records that there is any great increase in the height to which the floods rise in this country. Whether or not the height to which floods have risen in recent years has been affected by river improvements and the greater facility with which floods can be got rid of, or whether there is a diminution in the quantity of water, are questions upon which the Committee have not at present sufficient information to speak positively.

2, "Report of Committee on the Occurrences of the Helm Wind of Cross Fell, Cumberland, from 1871 to 1884." In response to a letter inserted in the Penrith newspapers, the Committee has received a number of communications bearing on the subject of the helm wind. With the view of ascertaining as far as possible the meteorological conditions which exist when the helm wind is blowing, all the recorded occurrences that have been received have been chronologically arranged. The first systematic record commences in 1871, and in this report the Committee deals with all occurrences from that date to the end of 1884. Since that time more detailed records have been commenced at numerous stations in the locality at the instigation of the Royal Meteorological Society. Ninety-three instances of the helm wind were recorded from 1871 to 1884; the months with the greatest frequency being February, March, April, and November. On examining the daily weather reports it was clearly seen that whenever the helm wind was blowing there was an easterly wind not only in the locality but generally over the entire country. As the helm wind seemed to occur so regularly with the easterly wind, the Committee further extended the inquiry with regard to the east wind. The daily weather charts were consequently examined for each day from January 1st, 1871, to December 31st, 1884, and every occurrence of east wind tabulated; the instances with

general easterly conditions over the whole country being kept separate from those instances in which the easterly wind was only partial, though of sufficient intensity to occasion the helm wind. This examination showed that although the wind over the United Kingdom is generally easterly when the helm occurs, yet the helm by no means occurs whenever the wind is easterly. Indeed, this step in the inquiry has not at all tended to the elucidation of the phenomenon in question, for it frequently happens that the conditions are to all appearances precisely similar when the helm is on, and yet no such occurrence has been recorded. This may in part be due to the occasional omission to record the helm, although it cannot possibly be in the main attributable to such an omission; but it points to other conditions being necessary besides absolute agreement of wind direction and isobaric lines. Possibly the different hygrometric qualities of the air with the existing easterly winds may be an important factor in deciding whether or no the helm will be formed; but it is not readily conceived why even in this case the helm wind should not blow. It must, however, be borne in mind that the surface winds can only be examined, whilst those at a comparatively small elevation may be intimately connected with the phenomenon. From the observations made prior to those started at the beginning of 1885 no idea can be formed of the behaviour of the upper currents even at the time of the occurrence of the helm winds, far less with the occurrence of each east wind experienced. The Society has, however, provided for the extension of the inquiry in this direction in the records which are now being collected, the observers supplying observations of the upper currents by means of the clouds, as well as the direction of the winds at the surface of the earth. As soon as a sufficient number of these observations have been received, the Committee hopes to present a further report which will tend to explain the phenomenon of the helm wind.

3, "Results of Meteorological Observations made at Assuncion, Paraguay," by R. Strachan, F.R.Met.Soc.

ANNUALS FOR A GARDEN NEAR THE SEA.

ALTHOUGH much has been effected of late years in making residences near the sea more enjoyable and interesting to a lover of flowers, it is matter of regret that so little is done to make these resorts more gay by the freer use of flowering plants. This may be due in a great measure to the failures that have attended the planting of trees, shrubs, and flowering plants of an unsuitable character, and which, as might have been expected, have not succeeded. Nevertheless, we have seen some very interesting and even gay gardens near the sea, especially of the class desired by your correspondent, "R. G."

Hardy annuals are, no doubt, wanted, and of those *Alyssum maritimum* does well, the flowers of which are white and sweet-scented; *Calendula pluvialis*, white; *C. officinalis* Meteor, yellow and brown; *C. officinalis* Prince of Orange, orange striped. All the Candytufts do well, and so do the *Eschscholtzias*. The Cornflower (*Centaurea cyanus*), and the *Chrysanthemum tricolor* vars. do moderately well. *Collinsia bicolor* and others of the genus are usually satisfactory, similar remarks applying to *Clarkias*, *Gilias*, and *Godetias*. Perhaps the finest show is made by the Indian Pinks, but these to flower the first year well should be raised in heat, whilst as biennials their varied hues are delightful from an early period of summer. *Erysimum Peroffskianum* and *Lasthenia californica* produce their yellow flowers freely. *Limnanthes Douglassi* and *Malope trifida* and var. *alba* are useful. *Mathiola bicornis* for its scent is well worth place, and the Tom Thumb varieties of *Tropaeolum* are bright and telling, and *Mignonette* is indispensable. *Lupinus nanns* and var. *alba*, *Saponaria calabrica* and var. *alba*, the many vars. of *Silene pendula* are compact-growing and effective. *Senecio elegans* var. is very free, and *Virginian Stock*, with its white variety, is superb. *Antirrhinums*, if sown early, will flower the first year and do well, whilst for spring flowering there is nothing to surpass Wallflowers.—SEASIDE FREQUENTER.

CATTLEYA SKINNERI AT ELMER'S LODGE, BECKENHAM.

PROBABLY no other genus of the Orchid family can compete with the *Cattleyas* in the remarkable gorgeousness and richness of colour displayed in their blooms. The utmost richness and depth of colour to be found in the blooms of such charming species as *C. gigas*, *Mendeli*, *Trianae*, *Mossiae*, *Dowiana*, and others of the same type. Most deservedly, then, are the foregoing species held in high esteem. There are, however, other species of the genus *Cattleya* which, although not so gorgeous in size or colour of bloom, are nevertheless well worthy of the attention of the orchidist. We refer to that well-known *C. Skinneri*, which may truly be said to be one of the most floriferous and not the least showy of the genus. Unfortunately the colour is not so popular with the ladies. *Cattleya Skinneri*, notwithstanding these objections, is showy and useful, and blooms at an opportune time, when our stoves need a display of colour to render them bright and attractive.

Imagine the effect produced by a house containing plants of this species carrying in the aggregate over 500 expanded blooms. Such a display I saw the other day in a small Orchid house in the gardens of J. Goddard, Esq., Elmer's Lodge, Beckenham. The plants, with one exception, which had twenty-five pseudo-bulbs, were not large, but were thoroughly healthy, the pseudo-bulbs of some being remarkably fine, one being 14 inches long. The largest specimen was carrying five spikes, each with ten flowers, which were of good substance and very rich colour, evidently a superior variety. One of the most notable features of these is the comparative ease with which the gardener, Mr. Reed, manages them. There is no scientific skill, so to speak, practised in their culture. Many of them are growing in the same pots which they have occupied for years, the surface of the compost being covered with a fine species of

moss, and yet these plants annually make fine growths and yield a similar display of flowers. Mr. Reed places inverted pots in small pans of water, and on these he stages his plants. Once a week only does he give water, which is pumped from an adjacent brook into a tub in the house, and then a thorough soaking is given overhead as well as at the roots. No attention is paid to the regulation of the temperature; indeed, owing to defective heating arrangements, the greater portion of the heat is often absorbed by another larger house. This, of course, has the effect of considerably reducing the temperature, and yet we have never seen a healthier lot of plants flowering at one time, conspicuous in size and colour, and in such profusion too.

Nor is this the only noteworthy example of Mr. Reed's success in Orchid-growing. The houses in which these plants are growing are not the elaborate houses we are accustomed to see, but, to use an old phrase, are home-made ones, simple in construction, and yet well adapted for the purpose.

Among other noteworthy examples of cultural skill we noticed a fine plant of *C. Mendelli*, with large and richly tinted flowers. *C. citrina*, growing on blocks, had very fine pseudo-bulbs, and had apparently flowered very freely. This species was thriving in a higher temperature than is usually recommended.

In another large house, devoted to cool Orchids, I noticed well-grown and flowered examples of *Oncidium sphacelatum*, *O. stelligerum*, and the curious *O. Papilio*, together with *Trichopilia suavis*, *tortilis*, and several species of *Odontoglossums*, all of which bore striking testimony of Mr. Reed's industry and skill, and the same may be said of the other departments of this garden.—T. W. S.

THE INSECT ENEMIES OF OUR GARDEN CROPS.

THE TURNIP.

(Continued from page 238.)

THE Turnip, like the Cabbage and its allies, like the Mustard, the Radish, and other garden plants of the Cress tribe, is peculiarly liable to the inroads of caterpillars, some of which appear above ground, but the greater number carry on their attacks insidiously, feeding beneath the earth, or at least concealing themselves there by day. Our friends on the Continent think we should be far less annoyed with these than we are now if the practice of caterpillar-picking were diligently followed, as it appears to be by them, perhaps because they have more spare time, or else a larger amount of patience than British gardeners possess. Much of this work, however, from the nocturnal habits of many caterpillars, needs to be done at night, and doubtless in gardens quantities of these and other insects may be cleared by assiduous hand-picking, though in fields it would be useless to attempt this.

Of the Turnip moth (*Agrotis segetum*) there is generally but one brood in the year, the moths being amongst the multitude of insects that belong to leafy June. We may see them at the twilight hour, flying low, yet rather briskly, over the plants they are about to visit, and by no means confining their attentions to the Turnip, much as that vegetable is injured by them, for in some years they also do notable harm to Cabbages and Carrots, or even to the cereals. These moths are pale brown in the male specimens, darker brown in the females, with lines of blackish brown and a few pale spots, the hind wings of a pearly white. Sometimes the insects drop their eggs on the ground, but they more usually place them in a plant not far from the soil, and the young larvæ begin their inroads upon the plants quite low, frequently biting young Turnips, Swedes, or Carrots just where stem and root join, to the certain death of the plant. In the flower garden a bed of China Asters will occasionally be served in the same style, the stems being nibbled all round; the vitality of the sufferers suffers seriously, if not fatally.

Having done what mischief they can above the earth, these caterpillars go below, and during August, September, and indeed as long as there are Turnips growing, they will be discovered in the bulbs. A variable number may be found in a single bulb, sometimes nearly a dozen, where they form holes and channels, but in the event of a sharp frost, they usually quit the Turnips and strike deeper into the ground till a change comes. When of full size one of these caterpillars is $1\frac{3}{4}$ inch long, with small head, and feet small and pale; the skin is tight and shining, the colour an indistinct brown, a few faint lines run from head to tail, and each segment has a series of ten dark spots. Though the majority of these caterpillars live through the winter to become pupæ in spring, there are a few that each season change in October, and come out as moths soon after, but they die apparently without depositing eggs.

The late Edward Newman, discoursing upon this species, gives us a bit of wayside philosophy. "Nature is her own physician," he says; "almost every disease can be traced to some interference with the course of Nature. It is exactly thus with the world of animals. Birds, insects, all living things, have their appointed food; this is a law with which it is dangerous to

interfere. Nature supplies roots as the food of the Turnip grub. Man increases the supply of food prodigiously; Nature increases the number of devourers prodigiously. These grubs are the especial and favourite food of certain birds—the partridge, the rook, the starling. Following up the invariable law, Nature multiplies the birds because of this superabundant supply of grubs; man thwarts Nature, and gives immunity to the grubs." It was Newman's friend, "Rusticus," as he signed himself, of Godalming, who first called attention to this insect in 1832.

But however great be the encouragement given to birds, it will still be necessary for the gardener and farmer to take measures against this foe of the Turnip. Digging between the rows does harm to the crop while the plants are young, and it would not kill many insects, nor at a later period is it likely to prove effective, though not hurtful then to the Turnips. Hand-picking, by day or night, has never been regarded with favour in this country, though it might be an excellent plan if pursued within a small range. Watering with a weak solution of petroleum, or with tobacco water when the caterpillars are first out, must destroy many of them. It is a favourite practice to sprinkle amongst the plants lime, soot, or even salt, but the result is doubtful.

The caterpillar of the Heart-and-dart (*A. exclamatoris*) greatly resembles that of *Agrotis segetum*, and probably it obtained its peculiar Latin name from the fact that the mark upon the wings, which some compared to a dart, others likened to a "!" in the perfect state. This insect has also a resemblance to its relative, though it has a more distinctive colouring. In time of flight this corresponds with the more abundant species, but the eggs are often laid upon weeds in or near gardens, and the caterpillars after they have cast their skins seek out culinary vegetables; and although they occasionally feed on roots or underground stems, it is their general practice to travel from plant to plant just above the surface, doing most mischief at night, since they commonly hide during the daytime. These caterpillars crawl with some rapidity, and their habit of roving makes them a nuisance, for they will exhaust many plants that are not so far injured as to die off. Stimulative applications, such as guano, which have been proved to help on the growth of the Turnip crop, do thereby lessen the possibilities of harm from the Heart-and-dart caterpillar, and dressings that render the leaves disagreeable to it are also beneficial. By their mode of growth these increase in size more rapidly than the caterpillars of the Turnip moth, but still they now and then occur on Winter Greens.

The history of the diamond-back Turnip moth is very different from that of the preceding insect, for it is an insect that in ordinary years is only noticeable as a casual visitor to gardens, feeding on the leaves of the Turnip, or possibly on those of the Cabbage, but now and then, from some cause unexplainable to us, the caterpillars appear in such hosts as to strip some crops entirely. Having gnawed the leaves of the Turnip to the veins, they will then attack these, leaving only a fragment of stem. We have not, however, had a severe visitation of this insect since 1851. The moth of *Plutella xylostella* has long narrow wings, which have a series of spots, presenting to the eye diamond-shaped markings when the wings are closed, hence the popular name. In repose the antennæ are stretched forward, and at first glance the size and look of the moth reminds us of the clothes moth. The caterpillar is also a small creature, hardly half an inch long at its largest, pale green, sprinkled with black and yellow spots, thicker at the middle than at the head or tail. Still, though it is diminutive, a party of two or three hundred settled upon one plant, as will happen when it is abundant, soon make their ravages visible. During their early stage of caterpillar life, just at the period it is important to kill them if the plants are to be saved, they are so hidden amongst the leaves that applications to the rows are of little avail. Therefore it has been recommended, should this pest be detected, to brush the caterpillars from the plants by bunches of twigs, and when they have fallen between the rows to apply some suitable liquid or powder that will destroy them. Soft swellings that we sometimes find upon the bulbs of Swedes and Turnips are the abodes of a maggot that produces the Turnip-gall weevil (*Centorhynchus sulcicollis*), a species that is more frequently a feeder upon the roots of Cabbages, to which it is apt to be mischievous. The Turnip crop is rather disfigured than damaged thereby whenever it occurs.—ENTOMOLOGIST.

HEATING AND HOT-WATER PIPES.

IF the mains and boilers were covered with a kind of cement, as referred to by your able correspondent "Thinker," it would undoubtedly assist in the preservation of the pipes. It would also prevent radiation and loss of heat, which in the end means direct economy, and would

without doubt in a very short time clear the first outlay by the consumption of less fuel. This subject is not new, for when practising twelve years ago at Newton Hall, Stocksfield-on-Tyne, I remember a very large boiler, used for sawing timber, grinding mortar, threshing corn, &c., being covered with the composition mentioned, or a similar one. I never entertained any idea of its adaptability for boilers used for horticultural purposes until two and a half years ago when I found the boilers and pipes covered with it when engaged at the same operation, as stated by your correspondent, at the International Maritime Exhibition held at Tynemouth. I wish to thank your correspondent for giving the address of the firm who can supply this composition, I will make inquiries about it.

I am the more in favour of this composition if it will prove lasting, because I do not believe in setting boilers in a mass of brickwork or boilers to which brick flues are necessary for working them properly. I prefer having the heat and flame rising from the fuel playing on the boiler instead of heating bricks half the time, thus utilising the heat for the purpose for which it is required. I have three boilers only; two are capable of heating 10,000 feet of 4-inch piping each, the other 2000 feet, and the main portion of them are bare, therefore the composition in question would, I daresay, prove invaluable. I hope, however, before long to be able to test the matter for myself.

The use of indiarubber rings I did not advise, because I frequently saw them leaking in one of the largest nurseries in the kingdom some years ago. In another nursery the rings had been used, and I am under the impression that the joints were afterwards caulked with iron filings. I believe no rings are in use in this nursery at the present time. They might not have been adapted to the socket, but about this I cannot say. I have had some experience with them near the boilers, and I did not think it right or wise to write favourably of a system that I had proved imperfect. Perhaps "Thinker," or someone else will state how long the rings will remain watertight on mains constantly in use. This I do not know, and shall be pleased if anyone will furnish the desired information.

In turning to Mr. Lynch's letter, page 267, I must say I am equally surprised with his communication as he appears to have been with mine. Joints properly made with iron filings are not only safe but more lasting than joints made by any other material. The "hemp rope" and patent putty, used largely by a "foremost firm," will last only for a certain number of years before the joints require repacking. This conclusion is not arrived at barely from my own experience, but I am familiar with several establishments in which the joints have been packed as described, and they have given constant trouble and annoyance, and found occupation scores of times for fitters to repack them. Little faith can be entertained in the lasting properties of these joints, or how is it that they are not repacked again with the same material? I have seen and had experience with joints made with a variety of material, and none is so safe and lasting as those made with iron filings, sal ammoniac, and a small percentage of red lead mixed with the other two ingredients. If the iron joints have failed for a series of years, made by the "foremost firm" Mr. Lynch has in view, my contention is that they have not been properly made. I have here thousands of feet of piping, independent of the mains recently packed, and the majority of the joints have been in use from twenty to forty years, and I do not believe one single joint has ever leaked or bursted; in fact they have never done so since I have been here, and there is no trace that such has been the case previously. The joints in question will be just as good as they are to-day at the end of another fifty years, provided they are not allowed to rust. I am no fitter, but I do not hesitate saying that I could with the ingredients referred to above make joints that would last in perfect condition longer than the pipes themselves, giving both exactly the same treatment for preserving them. If provision is made for expansion by the use of valves there is no fear of iron joints breaking through the expansion of the metal. When iron joints leak after they are made it is due either to laziness on the part of the man entrusted with the operation, or the properties of the metal have been destroyed. Too much sal ammoniac with the filings will burst the joints even if the provision for expansion referred to has been made. I should much like to know from Mr. Lynch how long the joints he recommends would last with safety on mains constantly in use.—
WM. BARDNEY.

BOX FOR EXHIBITING ROSES.

If none of your great Rose men has sent you anything better for the information of "X. K.," who inquires about the "best possible box for exhibiting twelve Roses," perhaps the accompanying sketch (fig. 60) placed in the hands of an intelligent country joiner may aid in the production of a fair good box, but as to its being the "best possible" box, that I am afraid must rest more with the skill of the country joiner than with the writer. The box should be 2 feet 2 inches long, 1 foot 6 inches wide (outside measure), and not more than 5 inches deep. The outside of the box should be of 1-inch deal, and on the inside edge must be fixed a narrow neat beading about three-eighths inch wide by half an inch deep. The cover should be of the same length and width as the box, and 7½ or 8 inches deep, it being made of half-inch deal will fit on to the box, the beading keeping it in its place. One inch below the level of the beading a half-inch board should be fixed and holes made at regular distances for the tubes, the end holes being 3 inches from the inside of the beading, and

6 inches from centre to centre. The back and front rows should also be 3 inches from the edge, having 5 inches between them and the centre row. When the tubes are placed in position the box should be covered with fresh green moss up to the level of the beading. A handle should be fixed in the centre of the cover for convenience of carrying, and this cover may be fixed on the box by means of a stout leather strap through the handle. The box must of course be painted of a lively green colour, and if varnished over the paint will look all the better.—R. INGLIS.

FRENCH BEANS.

REFERRING to the note from "B." at page 289 on the one-sowing system of French Beans. According to my experience, in cold backward districts where frost in June is severe enough to ruin many fields of Potatoes is not an unprecedented occurrence, his system could not be depended upon. In order to insure a crop a second sowing at the end of May is therefore advisable in such districts. A third sowing in the middle of June, besides being useful for late supplies, is found equally useful by exhibitors for the autumn shows. In favourable seasons the quick growth of the plants from the sowing results in crisp succulent beans, which usually find favour with good judges of vegetables.

"B." mentions good management, but does not this include an intelligent study of the climate in which gardeners practise, particularly in connection with the culture of the more tender vegetables grown in the open garden?—D. MACKIE.

DAFFODIL SIR WATKIN.

WRITING in the *Manchester City News* respecting this Daffodil, Mr. W. Brockbank remarks as follows:—"I gave an account last year of the origin of this grand Daffodil, which was brought out by our townsman, Mr. William Pickstone, after having been cultivated at his estate, Maes-

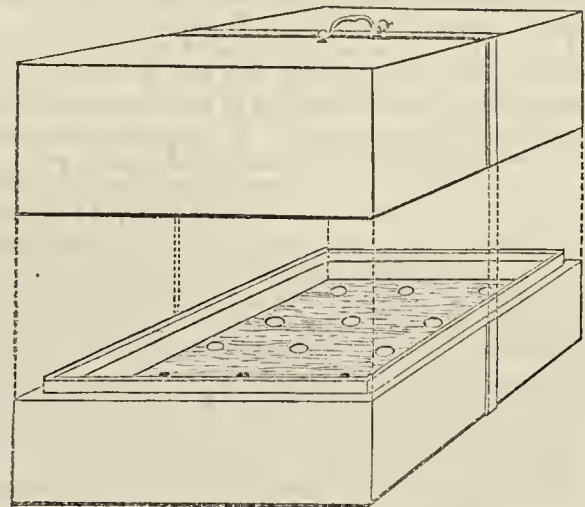


Fig. 60.—Box for exhibiting Roses.

mynan, near Caerwys, for many years, until he became possessed of a very large stock of it. No Daffodil has ever before produced such a sensation amongst florists, and its early promise is now being amply fulfilled, as it stands pre-eminently the finest of all the Incomparabilis section—a peerless Daffodil. On October 18th, 1884, a letter appeared, signed by William George, Brook Street, Chester, stating that it was an old type of the Giant or Mountain Daffodil, improved in colour and substance under cultivation, and that the same type could be found in many old gardens throughout North Wales, and also in its wild state in at least two counties, and had been known to exist there over forty years, and that this Sir Watkin was an old foundling under a new name. Very soon after this letter appeared, two of our leading seedsmen offered me bulbs of this wild form, which were expected to turn out to be the real Sir Watkin, and they were prepared to supply these bulbs by the thousand at a very moderate price. Similar offers were abroad, so that the opportunity was pretty widely known, and no doubt many took the risk and ventured to order. A few bulbs were presented to me as samples and for trial, but as I had a good stock of the true Sir Watkin, I found on comparing the bulbs that they were much smaller, and I therefore declined to purchase a quantity. The name of the person who was thus offering bulbs was then given to me, and I lost no time in communicating with him. He had the subject well mastered, and gave a very plausible account of the Daffodil as he knew it to occur in wild Wales, and he was quite ready to supply bulbs in any quantity. I took down his narrative and made a bargain by which he undertook to accompany me to the spot this spring, and I undertook to respect his secret and to see that he benefited if he could really prove the truth of his statement.

"The time of blooming is here, Sir Watkin is in his glory, but his rivals prove to be mere common Pseudo Narcissus as it occurs wild in North Wales. The man himself is not to be found. It may be true for all this, but at present the whole affair looks like a cleverly laid scheme for trading profitably upon the fame of the grand new Daffodil, if buyers could be found willing to take the risk. There is, however, a very solid foundation for Mr. George's statement that Sir Watkin was descended from the Great Mountain or Giant Daffodil, well known in Wales more

than forty years ago. In that fine old and very rare book, "Hales Eden," published in 1757, is to be found an account of the Nonpareil Daffodil, and a full-sized engraving of it is given in plate 41. This is indisputably like the Sir Watkin Daffodil.

"Mr. Pickstone lays no claim to having raised the Sir Watkin Daffodil from seed. He states that he found it growing in a garden he became possessed of in a mining district in Merionethshire about seventeen years ago. How it got there he does not know. He found it there, recognised its beauty, and kept it to himself until he had a very large stock, and he deserved the profit he gained by its sale. It is thus clear that we really know nothing of its origin, and it is likely enough that it may be found elsewhere if search is made for it."

YOUNG GARDENERS.

I DO not believe that as a class young gardeners have at all degenerated either professionally, morally, or otherwise; in fact I believe the present state of horticulture and the requirements of employers render it impossible for any young man to attain anything like eminence in his profession without working hard both head and hands. Still I should think every reader of your valuable Journal, whether young gardeners or others, must feel grateful to "H., Notts," for his well-meant advice, if only for the sake of the correspondence it has called forth, and to your Journal, too, as the medium through which it has passed. Mr. Buchanan's letter is excellent, but I would go further even than he does, and say however charitable it may be in one person to offer the benefit of his experience to those who need and are inclined to profit by it, it is almost, if not quite, impossible for one to mark out a line of conduct for another. —S. B.

SAVING HEAT IN OUTSIDE PIPES.

I HAD some time since to put hot-water pipes into two houses in my garden, and as they were situated in the open in the pleasure ground I could not put the furnace at either house, but had to fix it in a building about 12 feet from the nearest and 26 feet from the furthest.

I proposed to run the pipes underground from the boiler to the near house, with a branch off to the second, but the person who was to put them up protested strongly against the loss of heat that would be sustained in passing through the cold wet ground. Having had some experience in packing steam pipes I laughed at him, and asked him to put up his pipes as planned, and leave the rest to me. As soon as this was finished I built a brick pit 3 feet wide, 18 inches high at the front, 24 inches high at the back, covered it with lights over the short pipes, and have a most useful pit, utilising all the heat that would otherwise be lost.

The other pipe ran under a walk, which I could not divert, and I could not therefore build more pit, but simply made a trough of rough 1½-inch elm board (of no use for any other purpose) around the pipe, leaving the top board off. I then procured some tow refuse from a sacking factory (which material is practically of no value for anything else), packed the trough all round the pipes as tightly as I could, and nailed down the cover board. The tow refuse is a capital non-conductor, and so far as my opinion goes the experiment has been a complete success, my friend's prophecy that I would lose all the heat having not been verified. —LALESTOWN.

MANAGEMENT OF HORTICULTURAL SOCIETIES.

AS might have been anticipated, Mr. Waterman failed to convey a satisfactory answer why the localising of four classes out of 222 is a discredit to the Liverpool gardeners. In support of his assertion your correspondent quotes the result of last year's competition, which is calculated to convey a wrong impression. Undoubtedly the majority of the prizes for vegetables at the Sefton Park Show were won by local exhibitors, but we were not told the cause of this success. It was not because the local growers defeated visitors, but the latter were not sufficiently numerous to be represented in more than four classes, in three of which they were first, and in the other second, the latter being for six dishes of Peas. The chief difficulty is, however, in the collections of vegetables, where Carrots, Onions, and French Beans must play an important part, but are so bad to get here approaching exhibition form. French Beans are not difficult to grow, but in the open ground they come in rather too late for our show.

It is somewhat remarkable that in treating this subject Mr. Waterman never touched on Rose societies, the culture of the Rose being a specialty in the garden of which Mr. Waterman has charge. I will briefly notice the Wirral Rose Society. The majority of the classes in this schedule are, very properly, on the local principle; still there are ample classes in the open section for those who choose to compete therein. Now, to my knowledge, at the last three shows of this Society Mr. Waterman has been a competitor, but not in the open classes, of which he is so strong an advocate, but invariably in the local classes. Why is this? If Mr. Waterman admits he could not compete on equal terms in the open classes I am willing to believe him, but certainly he should be more charitable to local exhibitors of vegetables and hardy fruits, which are as difficult to cultivate here as the Rose.

I must remind "Northerner" I did not state that the cultivation of vegetables in the neighbourhood had arrived at its climax, but that the improvement had not been sufficiently marked to hold out hopes of equaling the productions of more favoured localities. I am supported in this view by many good vegetable growers and all-round gardeners, including

Mr. W. Mease of Wyncote, and Mr. W. Tunnington of Calderstones; the latter once remarking to me, "It's no use; we cannot do it;" but still Mr. Waterman and "Northerner" say we can; therefore I shall only express the hope of many, that your correspondents will illustrate their confidence in a practical manner at our forthcoming exhibition on August 1st.—A. R. COX.

I BEG to correct "Northerner's" statement (page 314) as to the Shrewsbury Society, in which he states "If my memory serves me rightly two or three classes only are open," whereas the summer exhibition for the present year the first ninety-eight classes are open to all as to district, sixty-seven being open—two for gentlemen's gardeners only, and twenty-nine for amateurs only. The entrance fees are for the entire schedule 10s. 6d., and 2s. 6d. for each of the following sections—cut flower, fruit, and vegetable. Any person who cultivates his own garden or employs a gardener only occasionally, and does not grow for sale, will be considered an amateur. The rest of the schedule is devoted to cottagers, which includes forty-eight classes, six prizes being offered in each class in the vegetable and fruit sections, and four prizes for each of the flower and plant classes. In the year 1883 the whole of the spring schedule was restricted to Salop and Montgomeryshire, and about six classes of the summer show.

The restrictive classes of the Liverpool Horticultural Association are open to exhibitors within ten miles radius of Liverpool, not of the Exchange, as might be possibly understood from your correspondent. It is with great satisfaction I note Mr. A. R. Cox "readily admits that considerable improvement has been perceptible in the local exhibits at the last two or three shows," which is sufficient to justify that no radius should be required for Liverpool, more than Manchester, Edinburgh, York, or Shrewsbury, who generously throw open the whole of their schedules, and the three first-named free. Liverpool has only had one open schedule, which was last year.—R. G. WATERMAN.

AURICULAS AT GREAT GEARIES.

FOR several years Mr. James Douglas has been giving close attention to raising new varieties of Auriculas, and by adopting a systematic crossing of the older varieties to effect a special purpose he has succeeded in adding several handsome forms to the best of the Show type. It appears probable that most of the earlier varieties of Auriculas were simply chance seedlings—that is, seed was saved from good plants, and from their progeny the best were selected, or when crossing was undertaken it was without having any definite object in view. Such is Mr. Douglas's opinion, and he has proved that methodical crossing in Auriculas, as in other plants and the animal kingdom, is productive of the most satisfactory results. All the crosses made are distinguished by numbers, every plant from the same cross bearing the same number until it is proved, when if found worthy, it receives a name. The numbers, with the corresponding parentage of each cross, are entered in a book, and as the plants flower their respective merits are described. This is a most interesting record, many remarkable facts having been observed in the course of the experiments, which it is hoped Mr. Douglas may some day give in detail for the instruction of hybridists.

So highly developed is the Auricula of the florist that it might be thought there is little room for farther advance, yet the contrary has been proved by the Ilford novelties, several of which are annually awarded certificates at the metropolitan exhibitions. As an example of these, we have selected the variety Mabel (fig. 61), which was shown at the National Auricula Society's (Southern) Exhibition in 1881, when it was awarded a prize as the best grey-edged Auricula, and another as the best Auricula of any class in the Exhibition. It was obtained from a cross between Chapman's Marie and Douglas's Silvia, the latter being the seed parent, and is distinguished by its good robust habit and handsome flowers, the body colour being a deep maroon, the past e very solid and pure, and the edge even.

Many others of equally fine quality could be named. Thus in 1882 Mr. Douglas obtained certificates for four varieties—Jumbo, green-edged, Mrs. Moore, grey-edged, Ada Hard widge, and Princess of Wales, Alpines. In 1883 and 1884 several more were similarly honoured; still, others have been added this year, and we may yet expect many more beautiful varieties.

THE STEM ROOTS OF LILIUM AURATUM.

DURING the past ten or twelve years this Japanese Lily has become very popular in this country, and is regarded by the majority of cultivators as the finest of all Lilies. Perhaps this is the case, but I cannot help thinking that it does not surpass for usefulness that grand old inhabitant of our gardens *Lilium candidum*. This is not to be despised with its towering flower stems 5 to 6 feet high, and sometimes more in a genial home, with from twelve to eighteen fully expanded flowers. It never fails either when grown and forced in a pot or planted outside, but the same cannot be said of *L. auratum*, for which the foremost place

amongst our Lilies is claimed. Probably more *L. auratum* have failed since it was first imported than all other Lilies together.

Lilium auratum is much inclined to produce surface roots from the

flowers. Talking recently to an intelligent cultivator I soon discovered that he had formed similar opinions, considering the surface roots a provision to assist in the development of the flower stem, and the lower



FIG. 61.—AURICULA MABEL.

flower stem when 1 foot or a little more in height. Many cultivators hail the appearance of these roots with pleasure, and encourage their extension. I remember asking the chief under whom I served some years ago the cause of these surface roots being formed, and was told that it was "natural," and provided for the assistance of the flower stem and

roots from the bulb to prepare and develop the bulb for another season. If surface roots are "natural," why are they not produced from the growth that issues from every bulb? That they assist in the development of the flower stem cannot be doubted, for without them I believe hundreds of *L. auratum* would fail to lengthen out their stems and expand their

flowers, simply because the necessary support could not be furnished by the lower roots; the surface roots assist, and if I have not wrongly observed they do this at the expense of the bulbs. I dislike the appearance of surface roots, for they are a sure indication of sluggish root-action below. I have been watching closely these surface roots for some years, and find that the bulb never increases in size, but frequently the reverse, and finally dies. On the other hand, when no surface roots are produced from the stem abundance of healthy roots are found below, and the bulb increases annually in size. I believe surface roots are unnatural, and only produced when the proper roots are defective. Sometimes they assist in accomplishing the object for which they are produced, but not unfrequently the stem dies before the flowers are opened. I have found the more the surface roots are encouraged the more sluggish and inactive the lower roots become.

I remember seeing a large quantity of bulbs planted that were light, soft, and flabby, as imported bulbs often are, and in due season they flowered. The majority made a mass of surface roots, and in some instances not one had been made from the base of the bulbs, and all in this condition decayed; while the others, with the exception of those that had rooted only from the base of the bulb, had decreased in size. This was very disappointing, as the bulbs were lifted for the purpose of sale, and found to be much smaller than when planted. The bulbs were planted again; some flowered, some failed before the flowers were opened, but the majority died, and those that did not only sent up two or three small leaflets each. My experience leads me to believe that if these surface roots were discouraged, and broken off as they make their appearance, and the top portion of the flower stem removed before they grew too high, that the lower roots would be induced to grow, and many bulbs that are now lost after the first or second year would be preserved.

I believe the best plan is to start imported bulbs in pots in a cold frame, plunging the pot and covering the surface to prevent watering and evaporation, thus establishing them before planting them out. All that produce no surface roots could be planted out, while those that do could be retained in pots, and recruited if possible by the means indicated above.

When this *Lilium* is plan'ed out a partially shaded position should be selected for it from full sunshine, or the surface of the bed in which they are growing may be covered with some dwarf-growing plant or well mulched. When fully exposed to the sun this *Lilium* is very liable to "sunstroke." I believe large numbers are lost from this cause alone, and if once affected they never recover.—SCIENTIA.

[Many experienced growers of Lilies regard the stem roots as useful assistants at the flowering stage, though abundant roots at the base are essential to the proper support of the bulb.]

ROYAL HORTICULTURAL SOCIETY.

APRIL 21ST.

As announced in the Society's arrangements for the year, the meeting of Tuesday last was to have been held on April 28th, but it was subsequently found that it would be more convenient to hold it at the same time as the Auricula Show, so that there will not be another meeting until the Orchid Conference, May 12th and 13th. Several collections of Daffodils, Messrs. Carter's handsome group of Cinerarias, and miscellaneous plants from other exhibitors constituted the chief attractions on Tuesday, but the duties of both Committees were comparatively light.

FRUIT COMMITTEE.—Present: Harry J. Veitch, Esq., in the chair; and Messrs. John Lee, Jos. Ellam, A. Howcroft, John Burnett, W. Denning, Arthur W. Sutton, Harrison Weir, G. T. Miles, John Woodbridge, G. Paul, T. Francis Rivers, G. Bunyard, T. B. Haywood, and G. Goldsmith. There were only two exhibits. Mr. James Dean, Titsey Green, Limpsfield, sent several dishes of Apples, for which a vote of thanks was accorded, the varieties in best condition being Lamb Abbey Pearmain, Gloria Mundi, Winter Queening, Dumelow's Seedling, Court Pendu Plat, and Winter Pearmain. A similar recognition was accorded to Mr. C. Davis, Moat Park, Maidstone, for a brace of neat Cucumbers. In noticing the Rhubarb shown at the last meeting, a variety was mentioned as having been certificated, last year; this was Hawkes' Champagne, not Dancer's Red, as stated.

FLORAL COMMITTEE.—Present: Mr. John Fraser in the chair; and Messrs. James O'Brien, John Dominy, H. M. Pollett, H. Williams, H. Ballantine, Shirley Hibberd, Noble, James Walker, H. Herbst, W. Bealby, H. Bennett, W. B. Kellock, Dr. M. T. Masters, W. Wilks, Amos Perry, Harry Turner, and James Douglas. One of the most remarkable exhibits before the Committee, and which occupied the attention of the Committee for some time, was an exceedingly fine specimen of *Dendrobium nobile* from Mr. Prinsep, gardener to Mrs. Portman, Uxtd Park, Uckfield. This was shown to illustrate the system of "pruning" practised by Mr. Prinsep, and which he described in our columns last year. The plant had four dozen flowering growths from 2 to 3 feet long, the majority being loaded with flowers from the base to the apex, a total of 630 blooms having been counted upon the specimen. Upon some plants Mr. Prinsep states he has forty-seven flowers on a growth. The system practised is briefly this. The pseudo-bulbs are cut off close to the base now or in a week or two's time, and the plants are then placed in strong heat to make fresh growth, which, after it has reached its full size, is matured in a cooler temperature, and the plants are given a complete rest in a cold house. Much discussion was caused by this plant, but the evidence was conclusively in favour of the Uxtd system, for the specimen exhibited had been treated in the same way for six years, and the growths were as strong and stout as anyone could wish to see. A cultural commendation was deservedly awarded for the plant, and a desire was expressed by many members of the Committee that the same or another specimen might be exhibited at the Orchid Conference.

Mr. R. J. Lynch, Curator, Botanic Gardens, Cambridge, showed a plant

of a new Balsam from Central Africa named *Impatiens episcopi*. It is much like *I. Sultani* in habit, foliage, and form of the flowers, but the colour was quite distinct, being a warm rosy crimson, the stems being reddish, and Mr. Lynch has also noted several other minor points of distinction. It is equally as free as the better known species, but as it grows at an elevation of several thousand feet it is expected to prove hardier than that. H. J. Elwes, Esq., Preston House, Cirencester, sent a collection of choice hardy flowers, including a brilliantly coloured Tulip, which was certificated. Sidney Courland, Esq., was awarded a vote of thanks for two pretty varieties of *Odontoglossum* with a yellow ground barred with bright brown, one being named after himself. A similar recognition was accorded to Messrs. H. Low & Co., Clapton, for a handsome variety of *Cattleya gigas*, and *Dendrobium anosmum* Dayanum somewhat like *D. macrophyllum*, having a large purple scoop-like lip. Messrs. J. Veitch & Sons, Chelsea, also had a similar award for two double Ghent Azaleas, one Marie Van Houtte being pink and cream-coloured, the other, Louis ainc Van Houtte, bright salmon, both charming varieties and very free. Mr. W. Cauldwell, Wantage, sent a box of brightly coloured Primroses; Mr. James, Slough, had some fine Cineraria blooms; and Mr. H. Hooper, Bath, had a large stand of Pansies most varied in colours.

The groups of plants and collections of flowers from nurserymen were extensive and beautiful, Daffodils and hardy flowers being admirably shown by Mr. T. S. Ware, Tottenham, who well deserved the silver-gilt Banksian medal awarded for his handsome group. Messrs. Barr & Son, Covent Garden, had a similarly fine group, and was adjudged a silver Banksian medal; Messrs. Paul & Son, Cheshunt, securing the same award for a very choice group of hardy flowers; and Messrs. Cutbush & Son, Highgate, were also adjudged a medal of equal value for a group of admirably grown greenhouse plants, amongst which a fine collection of Epacris was notable, *Boronia*, *Acacia*, *Choisyas*, and other attractive plants being strongly represented.

Messrs. James Carter & Co., High Holborn, contributed a large group of their "Brilliant Prize strain" of Cinerarias, which comprised a great number of distinct and bright colours—blue, purple, crimson, pink, white, and parti-coloured flowers being well represented, and one variety with narrow petals somewhat after the cruenta style but bright blue was a distinct break. A bronze Banksian medal was awarded.

Mr. C. Turner, Slough, was awarded a silver-gilt Banksian medal for a large and beautiful group of Pelargoniums and Azaleas, including a number of distinct and handsome varieties most freely flowered. Mr. W. Bull, Chelsea, had some plants of *Crinum giganteum concinnum*, a variety with very large flowers, the bright scarlet *Hæmanthus Kalbreyeri maximus*, and the spotted *Lilium elegans guttatum*.

Only two certificates were awarded—namely, to the following:—

Tulipa Oculis-Solis Merveana (H. J. Elwes).—A handsome variety with bold bright scarlet flowers upon tall stout stalks. One of the Asiatic collection of plants recorded some time since.

Phalænopsis Mariæ (Ballantine).—A beautiful species found by Mr. F. W. Burbidge in the Eastern Archipelago at an elevation of 2000 feet. The flowers are 1½ to 2 inches across, white, barred with rich brown and blotched with purple at the base of the sepals and petals, the lip being of the same purple tint.

Narcissus spurius coronatus (E. H. Krelage & Sons, Haarlem).—This was certificated at the previous meeting, but was omitted from our report. It is a fine variety of the Ajax group, with a bold tube, very bright yellow in colour, and beautifully formed.

SCIENTIFIC COMMITTEE.—*Tulips and Fritillarias.*—Mr. Elwes exhibited the following species and vars:—A magnificent form of *T. oculus-solis*, brought by Mr. Donovan from Merv. It has the habit common to Asiatic species of opening out flat in the sun like a plate, though Mr. Pascoe observed that it will also do so at Montpellier, though it is not usual with S. European Tulips; *Fritillaria tenella*, showing the influence of cultivation, one specimen being double the height of the wild form; *F. obliqua*, which appeared to be a long cultivated form of *F. tristis*, with the peculiarly twisted leaves; *F. græca* remains of a dwarf size; this, as well, as *F. lyricea* become many-flowered, instead of remaining two-flowered, under cultivation. Mr. Elwes remarked how wild Tulips under cultivation lose the serratures on the leaves, while the flowered become much enlarged, &c. *F. delphinensis* appeared to be a seedling of *F. latifolia*, produced by bulb from North Italy. He also exhibited the truly wild *Narcissus calathinus*, *Erythronium propullans*, and *Tecophylæa cyanocrocus* from Chili.

Iris, &c.—Prof. M. Foster exhibited several species of *Iris* as so-called *I. agrostifolia*, but the narrowest leaf was not so narrow as that of *angustifolia*. It seemed intermediate between *I. unguicularis* and *I. cretensis*, partaking more of the latter; *Iris Milesii*, from the Himalayas, intermediate between *I. tectorum* and *I. fimbriata*; *I. equiloba*, a form of *pumila*, but with nearly cylindrical ovary, that of typical *pumila* being trigonal. Another form of *pumila* remarkable for its beard was the smallest of the bearded *Iris*s, and another form very strongly scented like the Tonga bean, *Fritillaria amœna*, really *F. Sibthorpeana* (Boiss).

Hellebores, hybrids.—Dr. Foster read the following communication from the Rev. Mr. Ellacombe:—"In 1877 I received from Berlin a collection of hybrid *Hellebores* under the following names:—1, Hybridus; 2, 3, *Albidovirescens*; 4, *Reticulatus*; 5, *caucasicus purpurascens*; 6, *C. porphyromelas*; 7, *C. pallidus*; 8, *C. p. albus*; 9, *Punctatus hybridus*; 10, *P. purpurascens*. For three or four years these were all fairly distinct, but now the result is this—3 has entirely lost its mixed character and bears two distinct flowers, a large white and a pale pink; 1 has also gone into two colours, apparently *guttatus* and *Olympicus*; 5 is almost *Colchicus*; 4 is in two colours, a dull pink and a greenish white; 6 and 9 have become almost identical; 2 is a buff one, and apparently constant; 5 is also constant and a fine plant; 7 is constant; 10 has two very distinct colours, a good white and very deep dull plum. These colours are not mixed in the flowers, but the plants bear the two distinctly, as much as if they were distinct plants placed close together; but they are not distinct plants, but are borne on one root. The change from the hybrid characters to the colours of the parents has been gradual."

Orchids, weevils in.—Mr. Pascoe exhibited a specimen of an unnamed genus attacking Orchids, received from Professor Westwood of Oxford.

Hydrocharis Morsus-ranæ, propagative buds.—Mr. Houston exhibited

buds having two kinds of leaves; the lower hanging down appeared to have the use of balancing the plant so as to keep it erect.

Impatiens Episcopi.—Mr. Lynch exhibited some fine plants of this new species grown at the Botanical Gardens, Cambridge, from the Usagara Mountains of Central Africa, 4000 feet elevation. He had succeeded in raising a hybrid between it and *I. Sultani*, but it bore no pollen; but from the evidence of the fruit apparently set and swelling it will prove fertile with both parents.

Magnolia Campbellei.—Mr. W. Crawford of Lakelands, near Cork, sent blossoms gathered from a tree 35 feet high. It flowered for the first time three years ago, and has forty flowers this year.

Wistaria sinensis, pods of.—Mr. Noble sent a fruiting peduncle bearing three pods near the end, but which had failed to ripen any seed; they were from a seedling plant brought by Mr. Fortune from China, and is the only one which bears pods, but never ripens any seed. Mr. Noble remarks that the old plants derived from cuttings do not appear capable of forming pods. The Rev. G. Henslow remarked on this circumstance that the formation of pods without seeds was probably due to the inefficient action of the pollen. As Max Wichura has shown in the case of hybrids, "The ovaries may swell and ripen but not contain a trace of seed."—*Jl. Hort. Soc.*, vol. i., n.s., p. 63. Mr. Meehan in a paper in *Linn. Jl.*, vol. xvii., p. 90, stated the fact the seedling standard *Wistarias* as a rule only have pods with ripe seeds at Philadelphia, the trained plants rarely fruiting unless they sent up a shoot free into the air and unsupported, just as Ivy flowers and fruits, only under the same conditions. In the first expanding ordinary flowers of *Wistaria* he finds the pollen to be imperfectly-formed, or none. He would explain the difference as a result of nutrition. In the case of the self-supported standards (which make only short shoots every year) and the self-supported shoot of the trained plant, the vegetative energies were spent in a short time in overcoming gravity; whereas in the long, trailing, artificially supported branches it expended itself more slowly in making annual shoots sometimes 30 feet or more in one season. When the vegetative energy is drawing to a close the reproductive comes into play, and then only to a very limited extent, as seen in the terminal flower buds of the panicle being generally only capable of making fruit pods. Mr. Meehan observed the same rule with the American species, *W. frutescens*, as well as in *Catalpa syringæfolia*. Subjoined is his account of the plants as grown by him.

"I have seventy-nine plants of *Wistaria sinensis*, standing about 3 feet from each other in one straight row. These plants were themselves seedlings, and therefore not subject to objections which might be made if they had been all raised by layers from one original plant. They were trained to stakes a few feet high until the stems were strong enough alone to sustain their heads. In this condition they are called standard or tree *Wistarias*, just as *Roses* budded on stems a few feet high are known as standard or tree *Roses*. These make no attempt at vigorous growth when compelled to sustain themselves, but they flower profusely every year, and always produce more or less seed. The interesting fact in connection with this seedling is that only the flowers towards the termination of the raceme are fertile, and the fact may be thus formulated—as the growth force in the rachis weakens the probability of fruit is increased.

"In order to present this fact clearly I have had thirty old flower stalks counted, and find they bore on an average sixty-five flowers to a raceme. I have had 250 stems bearing one seed-vessel examined, and the number of flowers which fell before the seed-vessel was produced counted. The average of these is forty-eight, showing that in this number of cases more than two-thirds of the whole number of flowers on a raceme fall before one seed-vessel is produced. Of the seventy-nine plants a great number of the racemes produce no seed, and of those which do one pod is mostly all. But forty-four racemes produced two seed-vessels. These seed-vessels were some distance apart on each rachis; but the average distance has been taken, and then the average of the whole forty-four, and this shows that with this more favoured condition of nutrition only the forty-fifth flower bore seed. Seven out of the whole number on the seventy-nine trees bore three seed-vessels. In like manner these have been averaged, and the result gives 43.50 as the number of the flower successful in its seed-bearing object. There can be no question about the correctness of the position that it requires more nutrition to perfect three capsules than one. We might reasonably look for their appearance in what we should regard as the most vigorous portion of the raceme and the point best able to bear them, but we see that the average position of the three on the rachis is less in proportion to their numerical order than the two, and the two to that of the single seed-vessel, and that in all of the three classes the earliest two-thirds of the flowers fall, leaving the weakest portion of the rachis to bear the seed.

"All this has relation to nutrition. As regards pollenisation, some remarkable experiences were obtained. In my observations I have been aided by several members of the microscopical section of the Academy of Natural Sciences of Philadelphia. In none of the early flowers of the raceme could we find a trace of pollen, though the anther cells seemed perfect; but after about the half of the flowers had fallen some succeeding were found with a small quantity of pollen, and it would be of course from such as these that the seed vessels came.

"So far it might appear that the whole question resolved itself into one of pollenisation. But alongside of these seventy-nine tree *Wistarias* is one very strong one of the snow white variety. This had hundreds of racemes thereon, and every flower examined had a profusion of perfect pollen. But there is not a single seed vessel on this plant. The branches of a tree of the common blue form freely interlace, and have the same but no greater degree of fertility as the trees elsewhere. The barrenness of the white would be remarkable, in view of the general rule that albinos have less vigour than their more dusky parents; and this vegetative vigour ought to weigh in favour of fertility in this case. But the white *Wistaria* is an exception. It is more vigorous than the blue variety. Ten of the flower stems taken at random show an average length of 9 inches, while ten of the blue show but 6 inches. Ten racemes also give sixty-seven as the average number of flowers, while sixty-five is the average of the blue.

"From these facts I think there can be no doubt—

"First, That the *Wistaria*, when it grows vigorously, though it may produce an abundance of flowers, is unfertile.

"Secondly, That it is more fertile in proportion to the weakness of its

vegetative force, even though that force should be inadequate to a large supply of pollen.

"Thirdly, That mere temperature can have little influence on these conditions, as when the branches of two varieties interlace, under the same conditions as regards temperature, one is barren.

"Fourthly, That the lack of pollen in itself can have little to do with fertility, as the flowers of the pollen-bearing white, as freely visited by bees as the blue variety is, gave no greater fertility to the interlacing branches of the blue than to the trees many yards away."

NOTES ON THE STEPHANOTIS.

As I know you are always ready to record facts, I should like to call attention to a house of *Stephanotis* in the nursery of Mr. Wallis, East Grinstead. The house is a lean-to 50 feet by 11 feet, and the plants are now a complete mass of flowers. In April last year it was almost as full as now, trusses of blooms forming complete wreaths from one end to the other. The specimens are four in number, and have been planted four years in sound loam and peat on a well-drained bottom. They started well, and have continued growing strongly with very short-jointed wood, and a truss of blooms at every joint. I questioned if this was a different variety, but Mr. Wallis said it was raised from an old plant. The plants are very clean, petroleum being employed as an insecticide, applying it with a painter's brush where and when needed. The nursery is only a few minutes' walk from the railway station.—S. JENKS.

NATIONAL AURICULA SOCIETY (SOUTHERN SECTION).

APRIL 21st.

THE annual meeting of Auricula growers and admirers at South Kensington took place last Tuesday, the conservatory presenting a bright display owing to the combined attractions of the Auriculas and the exhibits before the Floral Committee. Larger shows of Auriculas have been seen at Kensington, but the absence of several well-known exhibitors was chiefly due to the unfavourable weather which had been experienced to within the past few days. Mr. Horner stated that he had seen some collections at Sheffield where the flowers would not be fully opened for a week or more, and in all exposed positions Auriculas were very backward in the north. All the classes were, however, filled, general satisfaction being expressed at the quality of the exhibits, and though coarse and weakly examples were noticeable in several collections there were numbers of unusually meritorious specimens to compensate for that defect.

SHOW AURICULAS.

The leading class in the section devoted to Show varieties was that for twelve dissimilar Auriculas, and in this four good collections were staged, the principal two being very close, and required careful judging, though the decision was unquestionably right. The Rev. F. D. Horner, Lowfields, Burton-in-Lonsdale, was accorded premier honours for excellent plants, strong, with good foliage, fine trusses, handsome flowers, and very even. The chief of the varieties was Greyhound, one of the exhibitor's seedlings, with very beautiful smooth bold flowers, the truss supported upon a stout stalk, and bearing ten pips. This was selected as the premier Auricula, but for the rule prohibiting the award of certificates to varieties staged in the general collections it would have received that honour also. The other varieties were Mrs. Horner, Greenfinch, Heroine with twelve pips, Lynette, Thetis, Monarch, Sapphire, and Nigella, all by the same raiser, together with Simonite's Rev. F. D. Horner, Mellor's Reliance, and Headly's George Lightbody. Mr. J. Douglas, gardener to F. Whitbourn, Esq., followed with highly creditable plants of Douglas's Duke of Albany, a rich maroon self, which has been awarded two certificates, the truss bearing fourteen pips; Horner's Sapphire, a deep purple self with twelve pips; Douglas's Mrs. Moore, a beautiful grey-edged variety, recently certificated at Kensington, with six pips; and Douglas's Silvia, another pleasing grey-edged variety. The third and fourth prizes were awarded to Mr. E. Pohlman, Halifax, and Mr. C. Turner, Slough, the four named being the only exhibitors.

With six plants the Rev. F. D. Horner was again in the leading position, showing Heroine with nine pips, Albatros, Monarch, and Florence, of his own raising; Headly's George Lightbody, and Simonite's F. D. Horner. Mr. J. Douglas took the second place, especially remarkable amongst his plants being Duke of Albany, No. 34 Seedling, a crimson self; Headly's George Lightbody, with eight pips; and Trail's Prince of Greens in surprisingly fine condition, with a truss of sixteen pips. Mr. E. Pohlman was a good third, having good examples of Horner's Sapphire and Read's Acme; the fourth, fifth, and sixth prizes being awarded to Mr. R. Dean, Ealing; Mr. C. Turner; and Mr. H. A. Rolt, 170, Hartfield Road, New Wimbledon. The best four plants were contributed by Mr. W. Bolton, Wilderpool Road, Wimbledon, which comprised an extremely good specimen of Trail's Prince of Greens, with eleven pips; Bolton's Mrs. Wilson, a purple self; Simonite's Frank Simonite, and Lancashire's Lancashire Hero. Mr. T. E. Henwood, Hamilton Road, Reading, was placed second, his finest plant being Mellor's Gipsy, with twenty-two pips, an enormous truss, and Trail's Beauty, very handsome. The third prize was gained by Mr. W. Brockbank, Brockhurst, Didsbury, whose best examples were Mellor's Negro, Leigh's Colonel Taylor, and Read's Acme, all fine. Mr. C. Phillips, Auricula Villa, Reading; and the Rev. E. F. Fellowes, Wimpole Rectory, Royston, winning the remaining prizes. The competition was fairly close with a pair of plants, dissimilar varieties, six exhibitors entering. Mr. T. Henwood was first with Mellor's Mrs. Heap and Read's Acme, very good. Mr. C. Orchard, gardener to J. Galsworthy, Esq., Coombe Warren, second with Headly's George Lightbody and C. J. Perry. Third Rev. E. F. Fellowes with Pizarro and Charles Brown. Fourth Mr. W. Bolton, with a purple self seedling and Walker's John Simonite; Messrs. Brockbank and Phillips being fifth and sixth respectively.

Single Specimens.—In the four classes devoted to these about seventy plants were staged, the following being the awards:—*Green-edged*.—Rev. F. D. Horner, first with Monarch and second with Conquest, both of his own raising; Mr. C. Turner, third with Turner's Justus Corderoy; Mr. E. Pohlman,

fourth with Trail's Prince of Greens; Mr. W. Bolton, fifth with the same variety and sixth with a seedling; Mr. Brockbank, seventh with Lancashire's Lancashire Hero; and Mr. Phillips, eighth with an unnamed plant. *Grey-edged*.—Mr. Brockbank, first with a seedling and second with Lancashire's Lancashire Hero; Mr. Henwood, third with Richard Headley and fourth with George Lightbody; Mr. Phillips, fifth with the last-named variety; Mr. Horner, sixth, seventh, and eighth with Kay's Alexander Meiklejohn and Lancashire's Lancashire Hero. *White-edged*.—Mr. Horner, first with Miranda and second with Magpie; Mr. Pohlman, third with Read's Acme; Mr. Henwood, fourth with Frank Simonite; Mr. Douglas, fifth with Read's Acme and sixth with Conservative; Mr. Brockbank being seventh and eighth with Read's Acme and Walker's John Simonite. *Selfs*.—Mr. Horner, first and second with Heroine; Mr. Bolton, third with Simonite's Mrs. Douglas and seventh with Simonite's Brilliant; Mr. Brockbank, fourth with Mellor's Negro; Mr. Henwood, fifth with Netherwood's Othello and sixth with Campbell's Pizarro; Mr. Phillips being eighth with the last-named variety.

Two handsome collections of fifty varieties, including Alpines, were contributed by Mr. J. Douglas and Mr. C. Turner, who were awarded the first and second prizes in that order. The Ilford plants were remarkably strong, with fine bold trusses, and as there was a good proportion of selfs they imparted a most welcome brightness of colour and diversity to the group. All the best of the new and old varieties were represented, one of the most notable of the former being Taylor's Glory, in first-rate condition. Mr. C. Turner also had a good selection of varieties, the plants being as healthy as could be wished.

Seedlings.—Classes were provided for these in each of the sections, two prizes being offered in each, and these brought several novelties, though only one was considered worthy of a certificate. In the green-edged class Mr. Horner was first with *Redwing* (Horner), a fine variety, the body colour black, the tube bright, the paste solid, and outline even. Mr. R. Dean was second for *Green Criterion* (Dean), a cross between Richard Headley and Rob Roy, bright green edge, narrow but dense white paste, black body colour, very even. Amongst the grey-edged seedlings Mr. Brockbank was first with *W. Brockbank* (T. Mellor), for which a certificate was also awarded. The flower is very large, but well formed, the edge well defined, body colour black, the paste solid and pure, and a highly coloured tube. Mr. Horner was second with *Hyperion* (Horner), flower of medium size, but well formed, dark body colour, and pure paste. Of selfs the best was *Mary Grainger*, shown by Mr. W. Bolton; flowers very handsome, of a deep violet purple colour, velvet-like in appearance, and a pure white paste. Second in this class was *Bluebell* (Pohlman), a beautiful variety, somewhat similar to the preceding, but of a bright violet shade.

ALPINE AURICULAS.

To those who are not experienced or enthusiastic florists the Alpine Auriculas often appear the most attractive; their rich colours render the flowers exceedingly bold, and their delicate fragrance is pleasing to all. There was not a large display of these on Tuesday, but the collections entered were sufficiently numerous to represent the principal varieties. For twelve varieties Mr. C. Turner secured first honours, staging well-grown plants of Philip Frost, Edith, Placida, Sunrise, Selina, Mungo McGeorge, Duncan, Mabel, Viscount, and Troubadour, some of the Slough varieties, which are such favourites. Mr. J. Douglas, who followed, also had some beautiful varieties of the same type, Slough Rival, Mrs. Dodwell, and Sensation being especially notable. With half a dozen neat plants Mr. C. Turner was again first, having Edith, Unique, Pallas, Tennyson, and Placida particularly fine. Mr. J. Douglas was second, a beautiful specimen of Gorton's Diadem being notable in his lot. Mr. R. Dean and Mr. A. Spurling The Nest, Blackheath, taking the third and fourth prizes.

SINGLE SPECIMEN.—*Gold Centre*.—Mr. C. Turner first with Rosalind, one of the Slough varieties, for which also the first prize was awarded as the best seedling. The flowers are bold, well-formed, of a dark crimson, lighter at the edge. Mr. Turner was also third in this class with Lucretia, another Slough variety, bright crimson shaded, which was placed second as a seedling. Mr. J. Douglas was second with Love Bird and fourth with Minstrel, both of his own raising, the Rev. Fellowes being fifth with Diadem. *White or Cream Centre*.—In this class Mr. C. Turner took the lead with Philip Frost and was second with Chastity, for which also the first prize was awarded as a seedling, the second prize being secured by another of Mr. Turner's varieties, Albion. Mr. Douglas was third with Ada Hardwidge, and the Rev. Fellowes fifth and sixth with Diadem.

The distinct yellowish and cream-coloured Auriculas are becoming favourites with several growers, and the two collections of this type at Kensington afforded good examples of the best varieties. Mr. J. Douglas in particular has paid considerable attention to them, the majority of the following, with which he gained the leading prize in the class for twelve, being his own seedlings. Snowdown's Knight, Khartoum, Quillette (Horner), Enid, Belle Douglas, Lord Tennyson, Evangeline, Twilight, Sunshine, and Sybil, some seedlings being unnamed. Mr. R. Dean was second with a more diversified collection, some of the varieties being very strange, a double called *Violacea* being suggestive of large Violets in both form and colour.

POLYANTHUSES, PRIMROSES, AND PRIMULAS.

Several charming collections of Gold-laced Polyanthuses were staged, and particularly notable amongst these were the premier six from Mr. J. Douglas, the plants being very healthy, bearing five and six fine trusses of bright flowers. The varieties were John Bright, George IV., Prince Regent, Burnard's Formosa, Elliott's Red Ground, and Bullock's Lancer. The second place was obtained by Mr. Brockbank, who had Barlow's Blackbird, Brockbank's Lord Derby, Crownshaw's Exile, Cox's Prince Regent, Waterhouse's George IV., and Saunder's Cheshire Favourite. Mr. R. Dean followed with good varieties. For three plants Mr. Brockbank was first with Exile, President, and Cheshire Favourite; Messrs. James Douglas and R. Dean being second and third. Three collections of twelve Fancy Polyanthuses were contributed by Messrs. Dean, Douglas, and Hooper, who were awarded the prizes in that order for good selections of varieties. There were two exhibitors of single specimen Polyanthuses—namely, Mr. Horner, who was first and second with Cheshire Favourite; and Mr. Brockbank, who was third and fourth with the same variety, and fifth with Prince Regent.

Polyanthus Red Rover.—Only one prize was awarded in the seedling class—namely, to Mr. J. Douglas for the above, for which also a certificate was granted. The flowers are of neat form, with a clear gold lacing, the ground colour being a very bright red.

Collections of a dozen Primulas were exhibited by Mr. J. Douglas and Messrs. Paul & Son, Cheshunt, the former having several beautiful varieties of the cortusoides type, together with *viscosa nivea*, *marginata*, *Nelsoni*, and *intermedia*. One of Messrs. Paul's most noteworthy Primulas was *glutinosa*, bearing neat bluish-lilac flowers, a very near approach to a really blue shade; the lovely *P. rosea* was also well shown by this firm. Messrs. Dean and Douglas also contributed collections of double and single Primroses very bright and varied in colours.

At the luncheon, which was held during the afternoon, Mr. Shirley Hibberd presided, and stated, in the course of some remarks respecting the position of the Society, that their prospects were favourable, though they had not received from Mr. Dodwell the balance due to them. Several toasts were proposed, the Rev. F. D. Horner replying for the exhibitors and Mr. Kirtland for the Judges; and in replying for the officers of the Society Mr. H. A. Rolt (Hon. Treasurer), observed that he had good hopes of increasing their funds by obtaining new members, and that no energy should be wanting to effect that object. Some discussion arose respecting the proposed Primula Conference in 1886, in which Professor Foster, Dr. R. Hogg, Mr. Shirley Hibberd, and Mr. W. Brockbank took part, and it was finally decided by a large majority that the Council of the Royal Horticultural Society be desired to nominate some gentlemen who, with selected members of the National Auricula Society, should form a committee to draw up a programme and make the necessary arrangements.

CISTUSES.

THE Cistus family, including the *Helianthemums*, is a large and varied one, furnishing us with a number of really handsome summer-flowering plants suitable for almost any position, from the overhanging ledges of the rockery to the mixed shrubby border. The genus *Cistus* itself, though comprised of a large number of showy species, is but sparingly cultivated at the present time, though its merits in point of beauty, of flowers, and general appearance, vie with, and even surpass, many more popular flowers generally met with in the flower garden, besides being of perennial instead of annual duration, as many of these are.

A few of them, like the Gum Cistus (*C. ladaniferus*), *C. villosus*, and others, attain to good-sized bushes, yet the majority of them may be easily kept within the prescribed limits of ordinary gardens. The matter of soil is, however, an important item in their well-being, and where that is naturally heavy or water-logged their cultivation had better not be attempted, unless in specially prepared beds or borders, as failure will invariably be the result. On the other hand, where it is light and well drained, they may be grown with the greatest ease, the lighter the soil the more easily they are wintered.

Hitherto the practice recommended of permanently covering them during winter, on the plea of their tenderness, has rarely failed to be disastrous in some form or other, our experience being that a much larger percentage succumb to the damp under cover than in the open border without the slightest protection, one in thirty being above rather than below the average in the latter case. Instances are, however, on record of the buds being damaged by late spring frosts, and some light portable material may be thrown over the plants at night during this period with advantage; but even this will hardly be required unless in a very advanced state, as most of them are capable of standing 10° or even 15° of frost without injury.

Some time ago we had the pleasure of seeing Mr. Whitehead's collection at Worcester, which consisted, though grown in large pots, of huge specimens the very picture of health. They were loaded with large flower buds, and with no more protection than that afforded by a position near a brick wall, being placed a sufficient distance from it to ensure a free circulation of air all round the plants. We were told they flowered profusely, and judging from their appearance they must have withstood many severe winters. On rockeries, &c., in the driest and sunniest positions, they thrive surprisingly well, appearing quite at home, so natural do they look hanging over the moss-grown ledges or trailing amongst the old clumps. Indeed, if the rockery be a large one, almost all the species procurable may find suitable quarters at heights from the walks corresponding with their robustness.

They are easily increased by means of cuttings, which strike readily if placed in a little heat, the best time being when the plants are in active growth. They may also be increased by seeds, which most of them ripen in warm seasons, sowing the seed as soon as gathered. The following are a few of the best, they will be found quite hardy under the conditions indicated above.

C. albidus.—A sturdy little species, suitable for rockeries, owing to its white woolly leaves. It has an attractive appearance at all seasons, and especially in winter. It is said to have been cultivated by John Tradescant, jun., as far back as 1656. From a foot to 18 inches in height, it forms compact tufts, which are covered during the season with a profusion of its pretty purplish flowers. A native of Spain.

C. crispus.—In a wild state we believe this is nearly always covered with a white down, which it partly loses under cultivation, as it also does to a large extent the crisp or wavy leaf character. It may, however, be distinguished from its near ally, *C. villosus*, by its longer and narrower calyx divisions. It grows from 2 to 3 feet in height, branching, and covered with lance-shaped leaves, slightly crisped or wavy, and pubescent; flowers purple, opening June and July. Native of Portugal, &c.

C. hirsuta.—A gem for rockwork, seldom exceeding 18 inches in height; leaves broad at the base, oval-shaped, very dense green; flowers

white with a dark purple blotch at the base of each petal. They are produced through the summer; they are as large as a florin. Native of South Europe, &c.

C. florentinus.—This is also grown under the name of *C. hirsutus* which it much resembles; the latter may be distinguished easily by its more upright habit and narrow linear lanceolate leaves.

C. ladaniferus.—The Spanish Gum Cistus, forms large bushes; very suitable for mixed borders or shrubberies, where its bright flowers are always attractive. In warm weather it exudes a sweet glutinous substance resembling gum, it has a strong balsamic odour not at all repulsive. The leaves are lanceolate, they are dark green with a smooth glossy upper surface; the flowers, produced in profusion, are large, white or creamy, having a purple blotch at the base; they are very handsome. It flowers in July and August. Native of Portugal and Spain, where it is plentiful on the hills.

C. sericeus.—A handsome slender-growing species, very useful for rockeries. It is also well adapted for pot culture, forming well-shaped miniature bushes from 1 to 2 feet in height, branched, and densely tomentose or hoary white. They are in opposite pairs, narrow, about an inch long; flowers small, pure white, crisped at the edges. Native of South Europe.

C. villosus.—Perhaps this is the most common in gardens. It forms bushes from 2 to 4 feet high, much branched, and well clothed with its rough hairy oval leaves. The flowers are produced together, almost in the form of an umbel, large, purplish, and spread open, not unlike a Dog Rose. It commences to flower in May and June, and continues until September. A native of South Europe. Among others may be mentioned, *C. monspeliensis*, *C. vaginatus*, *C. canariensis*, *C. salvifolius*, &c., most of which are in the way of *C. villosus*.—M.

NOTES AT CARDIFF CASTLE GARDENS.

THAT much-appreciated stove plant, *Eucharis amazonica*, is not in general grown to perfection. I receive many complaints such as "My *Eucharis* plants do not thrive, and I cannot understand why. They are potted in good loam and a few bones, &c., and yet the foliage dies." This is not the case with the *Eucharis* plants at Castle Gardens, Cardiff, which I saw a few weeks ago, when I had the pleasure of paying a visit to these gardens. There are six of the finest specimens I ever had the opportunity of seeing. The plants are still in the same house and the same position, and I believe in the same pots, as when I saw them four years ago. The house is span-roofed, the plants are in a row down the centre, the pots being raised above the surface of the bed, and rest upon a stand for the purpose, so they do not obtain any more bottom heat than that afforded by the atmosphere of the house. The pots are about 16 inches in diameter, and are well filled with extraordinarily strong bulbs. They appear to be almost lifting each other out of the pots. This I noticed was the result of being root-bound, as Mr. Pettigrew told me he but seldom pots his *Eucharis*. Each of the plants is 6 feet in diameter, the leaves being from 2 to 3 feet long, and about 8 inches wide in the centre. At the time of my visit had from thirty to forty flower spikes, each spike carrying from five to seven well-developed flowers, numbering something like 1000 blooms.

Since I called at the Castle Gardens four years ago there has been a great addition to the glass houses. There are four span-roof houses newly erected, measuring about 60 feet long by 16 wide. These houses are principally for plants, and are well filled with stove and greenhouse plants, such as Palms and Ferns, with flowering plants. I especially noticed some healthy specimens of *Adiantum farleyense* about 3 feet through. The greenhouses present a fine display of blooms. The *Cinerarias* are very well grown, there being about fifty fine bushy plants, with a great variety of colour and large flowered. These made a grand display, being associated with *Azalea mollis*, *Hyacinths*, *Primulas*, and a great number of other choice flowering plants, which produced a very pleasing effect. In the *Azalea* house the plants were looking very healthy and well set with buds, which were fast expanding. Mr. Pettigrew does not follow the tying-in practice with his *Azaleas*.

The Peach house contains four magnificent trees covered with flowers, which, I have no doubt, will set a good crop. In the early vinery the Vines are just showing bunches, which promise with good strength to produce an excellent crop of Grapes. The later Vines were still resting, but by their medium-sized and well-ripened wood they promise to give the usual satisfaction. The Vines are very clean and healthy, but they are only washed with soap and water at cleaning down time, and they are seldom painted with the mixture generally used for Vines. In one of the houses there is a Vine occupies one side of the span roof. The Vine is planted in the centre, and the leaders are trained horizontally, with canes taken up the rafters about 4 feet apart, which gives more satisfaction than the single-rod system. Vines in pots are well grown. Some fine canes were ready for starting with fine eyes, very short jointed, which I am sure will produce fine bunches. Another vinery near this was planted about two years ago; they are very strong, and promising for the future. I notice in this house there are some handsome Orange trees trained up the back wall which produce fine crops. Pines are also well grown, being very strong and showing some fine fruits. In the Cucumber and Melon houses were good batches of young plants looking very strong. Mr. Pettigrew uses the same soil for several years for his Cucumbers and Melons; he adds but very little new soil, just turning last year's over and planting them out, and the results are excellent. He generally takes from two to three crops of fruit from the same Melon plants every season. The varieties grown for a general crop are Eastnor Castle Melon and the Cardiff Castle Cucumber, which is a grand cropper of excellent quality, and without doubt a splendid exhibition variety.

The kitchen garden, which is enclosed with a brick wall, and is filled with all kinds of wall trees well set with buds and very neatly trained. The Apple, Pear, and Cherry trees are not so hard pruned as I generally see them, plenty of last year's wood being left, which is well set with bloom buds.

Passing to the pleasure grounds, my attention was attracted by some very fine Rose beds. Mr. Pettigrew generally obtains a good place in the prize list at the Cardiff Rose Show, which proves that he pays great attention to the queen of flowers. There are many acres of pleasure grounds surrounded with fine herbaceous borders, at the back of which are slopes of choice evergreen shrubs and trees at the back, which have a grand effect. Walking for a long distance by the side of a moat or lake we open out to at least another twelve acres of pleasure grounds with the lake upon the north-east side and a fine herbaceous border upon the south-west. These flower beds must in the summer months give a grand picturesque appearance. I may mention since Mr. Pettigrew took charge of these gardens he has been making improvements until he has entirely remodelled the gardens, the appearance of which reflects great credit upon him for the skill and taste he has displayed in his work.—H. MITCHELL.

CYPRIPEDIUMS.

THE old *C. insigne* is now over with us for the season. It is one of the very best of Ladies' Slippers that can be grown, especially for conservatory decoration. Those who have large conservatories to keep gay with flowering plants during the winter, and have only a very limited number of houses in which to prepare plants, should have a house full of this useful *Cypripedium*. It is at home after flowering in a vinery under the shade of the Vines, and the warm moist atmosphere suitable for Vines early in the season is just what this *Cypripedium* requires for the production of luxuriant growth and large flowers. The cool treatment the vinery receives after the Grapes are ripe is also suitable. From plants grown under these conditions we have had its flowers from early in October until the end of February, and with a greater number of plants there would be no difficulty in having its flowers over a period of six or seven months. What other *Cypripedium* will flower with such little trouble during the dreary autumn and winter months, and over the same lengthened period? *Cypripediums* should be much more largely grown than they are at the present time. I am convinced by observation that the flowers of these plants are displayed to much greater advantage when associated with other flowers than they are when arranged in the Orchid house.

When this *Cypripedium* is over for the season the dark and beautiful-foliaged *C. venustum*, if wintered in a temperature of 60°, or grown under warm conditions, will produce its flowers, and fill the same position in the conservatory. The dark smaller flowers of this species are less showy and effective, yet they are very conspicuous and afford a pleasing change. To have *C. venustum* at its best good-sized plants with from twenty to thirty flowers upon each should be grown in shallow pans. When small plants are employed with only five or six flowers upon each they are not half so effective. Our most effective specimen is nearly 2 feet through and most profusely flowered. There is no difficulty in accomplishing this, for it flowers with great freedom if subjected to stove treatment during the season of growth, and rested well in a cool house—say where the temperature ranges about 45° at night when in flower. To do this plant really well it is benefited by a little more heat while growing than *C. insigne*. The flowers last a long time in a cool house, but not so long as those of the last named. Where *Cypripediums* are appreciated for conservatory decoration we recommend a good batch of *C. venustum* to be grown to succeed *C. insigne*, and they may be brought into flower at one time, as this can be succeeded by *C. villosum*. Although *C. venustum* is considered a cool-house species, we have always found it increase more rapidly and do better in every respect when assisted to make its growth by heat.

Cypripedium villosum can be had in bloom over as long a period as *C. insigne*, but it is not like that adapted for winter flowering. It flowers later, and for the object we have in view this is an advantage, for it is not really wanted until *C. venustum* is past its best. If grown under the same conditions as that species it can be had in flower by the beginning of February, but we do not need them where *C. venustum* is grown until a month later, and they can be had in succession until the end of June, or even into the following month if retarded. Two batches of plants prepared for flowering at different periods will nearly accomplish this, for the flowers in a cool house last nearly three months in perfection. This variety, although it enjoys heat while making its growth, must not be kept in heat the whole year round, or instead of growing luxuriantly it will soon decrease in size and fail to grow with the same vigour as if subjected to cool treatment while in flower. While in cool structures too much water must not be given at their roots, but at the same time they must not be allowed to suffer from an insufficient supply, because it must be remembered that they have no pseudo-bulbs upon which they can draw.

Where Orchids are appreciated in conservatories and other structures kept gay, those named in these notes are invaluable for the purpose. What amongst flowering plants lasts longer in perfection, or possesses a more telling appearance? These plants are further valuable, because they are so distinct from the ordinary plants employed in these structures. They are easily grown and can be accommodated in vinerias, where the majority of flowering plants would fail to do well, especially after the roof becomes covered with foliage. They are comparatively cheap, and thus within the reach of all.—ORCHID GROWER.

NOTTS HORTICULTURAL AND BOTANICAL SOCIETY.

A SPECIAL general meeting of the members of this flourishing Society was held at the Society's rooms, Mechanics' Institute, Nottingham, on Wednesday evening last, April 15th, when there was a large attendance of

members and their friends, who closely examined the many interesting exhibits which graced the tables. The meeting was called more especially to give the members an opportunity of showing anything they might possess of interest amongst spring flowers, and a lovely display there was, the invitations sent by the energetic Hon. Secy., Messrs. J. Don and E. Steward, being heartily responded to. Mr. C. A. Pearson, Chilwell, was called to the chair, and at once opened the business of the evening by describing some of the exhibits and appealing to the exhibitors to individually give a description of their productions as well as their mode of cultivation.

Mr. T. S. Ware, Tottenham, sent a magnificent box of hardy spring flowers, amongst them being a great variety of Narcissus, Fritillaria, Scillas, and other lovely things, which was much commented upon and admired by all present. Messrs. Cannell & Sons, Swanley, Kent, also sent a great variety of Narcissuses, Cinerarias, Pelargoniums, and other cut flowers, all of which was much admired. A vote of thanks was awarded for these two interesting exhibits. Mr. Anderson, gardener to H. R. Clifton, Esq., Clifton Hall, exhibited a dozen finely grown Cinerarias grown in 6-inch pots, each of which carried massive heads of bloom measuring from 3 to 4 feet in circumference, the flowers being remarkably brilliant and of great size. The same exhibitor had handsome blooms of *Camellia Bealii rosea*. Mr. Anderson briefly described his mode of culture. Mr. Samuel Thacker sent a small but choice group of flowering Orchids, amongst which were several well-flowered plants of *Cattleya Trianae*, *Cattleya Sanderana*, and *Cattleya Mossiae*, also a very fine variety of *Dendrobium nobile*. Another interesting group was sent by Mr. German, gardener to T. B. Cutts, Esq., Malvern House, who is the President of the Society; amongst them were well-flowered examples of *Phalenopsis amabilis*, *Oncidium Marshallianum*, and *Odontoglossum triumphans*, &c. Mr. J. H. Walker, gardener to J. W. Lewis, Esq., Hardwick House, Nottingham, sent a most beautiful bouquet of Rose buds (*Lamarque*), also a well-grown plant of *Anthurium Schertzerianum giganteum*; and Mr. Meadows, gardener to C. J. Cox, Esq., Basford, a noble basket of *Dendrobium chrysotoxum* and a good stand of cut flowers of *Gardenias*, the former of which was awarded the Society's certificate of merit. Messrs. J. R. Pearson and Sons, Chilwell Nurseries, sent a stand of spring flowers. Captain W. Lambert, Mapperley Hall, had some fine hybrid *Rhododendrons*, the qualities of which were fully discussed by the members.

Several new members were elected, and a vote of thanks to the exhibitors and Chairman brought one of the most successful gatherings of the year to a close.

VEGETATION IN CHILI.

[The following interesting letter was recently communicated to the *Pall Mall Gazette* from Chaulion, Chili, by the celebrated botanical artist Miss Marianne North.]

My chief object in coming to Chili was to see and paint the old forests of *Araucaria imbricata*, known in England as the Puzzle-Monkey Tree, rather unreasonably, as there are no monkeys here to puzzle; probably they crossed the Cordilleras in disgust at the general prickliness of all plants here, especially the *Araucarias*, and never came back again. It was not easy to make out how to reach these forests. Some people talked of difficulties and even dangers; they said I must sleep out, be eaten by pumas, or carried off by Indians, a noble race which has never yet been conquered by the white man; others declared the trees no longer existed, having been all sawn up into sleepers for railways.

But, as usual, I found all impediments vanish as I got nearer the spot, and four hours of easy and delightful riding from Angole, the present end of the railroad, brought me to the comfortable farmhouse of the Irish family who now own the *Araucaria* forests, which could be seen from the windows fringing the tops of the hills some five miles off with delicate, long stilted umbrellas. Nothing could exceed the hospitality of Mrs. Smythe and her brother Mr. Nixon, and no more perfect quarters could be found than those they gave me. The house was very roomy, built as usual in one storey, with a verandah all round, on a bare little knoll rising from green meadows, and surrounded by hills covered with trees resembling Oak and Beech, growing separately and in groups, so that the sun could peep through and sweeten the grass under them, which gives the best of food to some 2000 cattle which are straying over the property, and to about a hundred cows, which at that time were giving quantities of milk and cream, and the butter was already famous. In the winter the cows are divided and given over in charge to the different cottagers on the estate, who take care of them, and make cheeses, giving back half the profits and keeping half for their trouble. The house might have been more picturesquely situated, but it was built at a time when the Indians were troublesome, and it was necessary to keep a good look-out, and have no bushes for them to hide in near at hand.

A BOTANIST'S PARADISE.

It was a lovely ride from Angole and its terrible dust. First we mounted over rocks and more dust for some 2000 feet, among Puzas and succulent and prickly plants (which prepare themselves for the long dry season by hoarding moisture and growing weapons of defence to prevent other thirsty creatures benefiting by it), and then leaving a glorious view of snowy volcanoes behind us we entered the mixture of forest and pastoral scenery I have just described, passing stream after stream of clear running water and more lovely flowers than I had seen in all Chili before. The *Embothrium*, or Burning Bush, was in full beauty, growing in long sprays of 6 or 8 feet high, quite covered with the purest vermilion flowers formed something like Honeysuckle. But I saw none grow into such a tree as I saw in my cousin's garden in Cornwall last year; perhaps it may enjoy a new soil and climate, and treat England as our common weeds do Chili; they have quite driven the natives out on the great plain or valley of Santiago, and show unbroken masses of *Camomiles*, *Thistles*, *Turnips*, and *Cornflowers* far stronger than those of Europe. Near the streams were masses of huge *Gunnera* leaves (whose stalks are eaten like *Rhubarb*), lovely Ferns with pink furry stalks and young leaves, and a most exquisite scarlet flower, something like a *Mimulus*, which dipped its roots in the running water and grew nowhere else. A small Bamboo and many other graceful plants grew over these things, and overhead hung from the branches of the Oaks a most beautiful *Lauranthus*, with bright green leaves and pale green buds, changing as they opened to yellow, then turning

orange, and becoming deep red before they dropped. The flowers were often half-smothered in the Grey Lichen, commonly called "Old Man's Beard," which waved in every wind, and grew in masses on all the Oaks. The Beech had its own pet parasite—a tiny Mistletoe, forming perfect balls of every shade of green and gold, and over the bushes climbed many species of Pea, *Lapageria*, and lovely pink star flowers, which hooked themselves up by the long tendrils at the ends of their leaves, while some yellow stars seemed to have no leaves, only tendrils. Tall *Fuchsia* trees were there, too, and *Budlea* with its golden balls, sweet as honey, and whose leaves when toasted and pounded form the popular cure for all wounds and sores. Another bush called the Pinche looks like a Lilac and white Heath, and is said to be a cure for all diseases. The Grass was in flower, quite red and lilac, and sprinkled over with exquisite scarlet Lilies, *Alstroemerias* of many tints, *Tropæolum*, and four species of Orchids so handsome that I persuaded my host to send roots to Mr. Veitch; it seemed a shame that the Chilians (who do not appreciate native flowers) should alone possess such treasures.

A FOREST OF PUZZLE-MONKEYS.

Soon after reaching the first *Araucarias* we found ourselves surrounded by them and all other trees gave way to them, though the ground was still gay with purple Peas and orange Orchids, and many tiny flowers whose names I did not know, and which I had not time to paint then—such flowers when picked die almost directly. Many hills and the valleys between were covered with old trees, covering some miles of space, and there are few specimens to be found outside this forest. I saw none over 100 feet high or 20 feet in circumference, and, strange to say, they seemed all very old or very young. I saw none of those noble specimens of middle age we have in some English parks with their lower branches resting on the ground. They did not become flat-topped like those in Brazil, but were slightly domed like those of Queensland, and their shiny leaves glittered in the sunshine, while their trunks and branches were hung with white lichen, and the latter weighed down with cones as large as one's head. The smaller cones of the male trees were shaking off clouds of golden pollen, and were full of small grubs, which, I suppose, attracted the flights of parroquets I saw so busily employed about them. These birds are said to be so clever that they can find a soft place in the great shells of the cone when ripe, into which they get the point of their sharp beaks, and fidget it until the whole cracks and the nuts fall to the ground. It is a food they delight in, and men too, when properly cooked, like Chestnuts. The most remarkable thing about the trees was the bark, which was a perfect child's puzzle of knobby slabs of different sizes, with five or six decided sides to each, and all fitted together with the neatness of a honeycomb. I tried in vain to find some system on which it was arranged.

A MOUNTAIN PICTURE.

After wandering about the lower lands we climbed through the bogs and granite boulders to the top of one of the hills and came suddenly on a most wonderful view, with seven snow cones of the Cordillera piercing their way through the long line of mist which hid the connecting mountains from sight, and glittering against the greenish blue sky; each one looked perfectly separate and gigantic, though the highest was only 10,000 feet above the sea. Under the mist were hills of Oak and Beech forest, and nearer those of the *Araucaria* domes, while the foreground consisted of noble old specimens of the same tree grouped round a huge grey boulder covered with moss and enriched with sprays of scarlet *Embothrium*. No subject could be finer if it could only be painted. But that "if" is the plague of my life, and every year has proved more and more that it cannot be. We saw a guanaco feeding quietly under the old trees, and it looked strange enough to be in character with them, and made me wonder how long such a Noah's ark kind of beast would be allowed to remain in such a civilised land as Chili, where nothing indigenous is valued. On the other side of the Cordilleras it is still so abundant that it is used as a beast of burden, though so weak that ten of them cannot carry the load of a donkey.

A TITANIC FLOWER.

The Puza or Chaguale was the other plant I wanted most to paint. One wretched specimen flowered at Kew last spring, and excited much attention, and I struggled to draw it in all the glare and discomfort of the Cactus house, not venturing to ask that so precious a plant should run the risk of catching cold by being taken to my room there. Here there are three kinds growing in quantities, each in its peculiar locality. The largest has a yellowish-green flower, and is seldom far from the seaside. Its proportions are those of a London gas lamp, the flower head even longer than the lamp, often over a yard long, and it is a most noble object when seen standing above its rosettes of Pine-like leaves, among the rocks and cliffs, with the sky and sea behind it of that deep blue and purple one only finds among volcanic rocks. The blue variety grows farther inland in the valleys and rocky clefts high up; whole hillsides are often covered with it, and I have seen twenty-five flower stalks rising from one mass of leaves, which are silvery and most beautifully curved like some of the *Bilbergias*, its cousins. I shall never forget the first time I saw them growing when climbing in search of them near the Baths of Apoquindo; the clouds overtook me and hid everything for awhile, till I saw those tall flowers like ghosts close to me, then a snow peak far beyond, and then I got into a new world of wonders, with blue sky overhead and a mass of cotton-wool clouds hiding all I had left below, and the strange Puza flowers for company and plenty of time to study them. About sixty branchlets are arranged spirally round the central stem, each a foot long, and covered with buds wrapped in flesh-coloured bracts. These open in successive circles, beginning at the base; the three flower petals at first opening are of the purest turquoise blue, then they become darker, a mixture of arsenic green and Prussian blue, the third day a greyer green, and then they curl themselves up into three carmine shavings, and a fresh circle of flowers takes their place outside, so that the longer the plant has been in bloom the larger its head becomes, and as the heads of the spikes or branchlets bloom last it loses its form and looks ragged and disreputable. Its stamens shine like gold in their polished metallic blue caps, and it is marvellously beautiful at first. The third kind is smaller, and its flowers thin and of a very dark blue, but its bright pink stalk is very effective when seen against the grey stones. The gum of the Puza is valuable as a medicine, and resembles gum arabic. Near the Puza the tall Cactus generally grows its pillars, often 6 or 8 feet high,

crowned with white trumpet flowers and buds, and ornamented with a parasite whose white and scarlet berries are eatable. I found that the flowers never faced the same side as the parasite; the former were as large as a German beer glass, and their footstalk was full of sweet juice, most refreshing to suck on the dry hillside, and less stupefying than the usual contents of such glasses.

The Government have been most generous to me, and have given me a free pass on all the railways, which has enabled me to travel with far greater ease, as it made the guards good to me also. They always gave me a carriage to myself, or rather a small velvet-lined box inside the ordinary American carriage, in which I felt safe, and could shut myself in and be less perplexed by the noise of the polyglot tongues around me. The authorities have also given me three dragoons, a perfectly unnecessary escort, except as against themselves. Since the war they have had little to do, and occasionally desert and find food for themselves. All my soldiers did for me was to hunt a small fox, galloping furiously, shouting, and flourishing their long swords over their heads; but, though they were said to have fought bravely in Peru, they could not (like the Frenchman in *Punch*) "catch a fox."

ROYAL BOTANIC SOCIETY.

APRIL 22ND.

THE second Show of the season was held in the gardens of the above Society at Regent's Park yesterday, the exhibits being arranged in the large conservatory. The Show, if small, was an attractive one; but, owing to the absence of competition in some of the principal classes, it was deprived of a certain amount of interest.

For twelve stove and greenhouse plants Mr. H. James, Castle Nursery, Lower Norwood, was awarded the first prize, showing good plants of *Erica*, *Victoria* and *Marnockiana*, *Azaleas Hercules*, *Apollon*, and *Jean Vervaene*, *Polygala Dalmaisiana*, *Tetrateca hirsuta*, and others. Mr. G. Wheeler, gardener to Louisa Lady Goldsmid, St. John's Lodge, Regent's Park, was placed second, the most noteworthy specimens in his group being an untrained plant of *Azalea Fielder's White*, *Hibbertia Reedii*, and *Eriostemons densiflorum* and *pulchellum*. The third prize was awarded to Mr. Butler, gardener to H. H. Gibbs, Esq., St. Dunstan's, Regent's Park.

In the amateurs' class for six greenhouse *Azaleas* Mr. G. Wheeler was placed first for fairly good specimens of *Magnificans*, *Stella*, *Antonia Theleman*, *Reine de Pays Bas*, *Criterion*, and *Duchesse de Nassau*. Third prizes were awarded to Mr. Butler and to Mr. Eason, gardener to B. Noakes, Esq., Hope Cottage, Highgate, N.

Mr. C. Turner, Royal Nurseries, Slough, was adjudged first prize in the corresponding class for nurserymen, showing *Eugene Mazel*, *Mrs. Turner*, *Comtesse S. de Kerchove*, *Duc de Nassau*, *Apollo*, and *Roi d'Holland*. Mr. H. James was a remarkably good second, and Messrs. J. Todman and Sons, Rose Park Nursery, Upper Tooting, third. Messrs. H. Lane & Sons, Great Berkhamstead, secured the first prize for twelve *Rhododendrons* with a fine group, and also in the class for twelve hardy *Azaleas*, showing strong and well-flowered plants. There was no competition, however, in either class.

For six forced *Roses*, amateurs, Mr. P. Percy, gardener to W. G. Rowlett, Esq., The Woodlands, Cheshunt, was awarded first prize, but there was no competition. For nine forced *Roses*, nurserymen, Messrs. Paul and Son, Old Nurseries, Cheshunt, secured the first prize for splendid plants of *Madame de St. Joseph*, *La France*, *Caroline Kuster*, *Beauty of Waltham*, *Madame Lacharme*, *Celine Forestier*, *Duke of Edinburgh*, *Madame C. Joigneaux*, and *Innocente Pirola*. No other groups were shown in this class. For twelve *Amaryllises* Mr. Douglas, gardener to J. Whitbourn, Esq., Great Gearies, Ilford, was awarded the first prize, showing such fine varieties as *Queen Victoria*, *Princess Beatrice*, *Dr. Masters*, and *Sir Donald*, amongst others.

Mr. C. Turner was adjudged first prize for nine *Pelargoniums*; handsome specimens of *Rosy Morn*, *Duchess of Bedford*, *Triomphe de St. Mande*, *Duchesse de Morny*, *Digby Grand*, *Madame Thibaut*, and others being staged. The colours were very fresh and bright. There was no competition for the remaining prizes.

In the class for nine *Cinerarias* Mr. J. James, nurseryman, Woodside, Farnham Royal, Slough, was first; dwarf, healthy, profusely flowered plants securing him the premier honours. Smaller flowers, but good plants, were represented in the second-prize group of Mr. James Douglas; the third prize falling to Messrs. James Carter & Co., High Holborn, W.C. The last-named firm were also adjudged a bronze medal for a very large group of *Cinerarias*. Mr. James Douglas received first prize in the class for twelve *Auriculas*, Mr. Turner being second, and Mr. E. Pohlman, Parkinson House, Halifax, third. Mr. C. Turner secured the first prize for twelve *Alpines*, Mr. Douglas being second, and each was also awarded a bronze medal for a handsome collection of *Auriculas* in the miscellaneous classes. For twelve herbaceous plants Messrs. Paul & Son were the only exhibitors and received the first prize.

Unquestionably the most attractive features of the Show were the splendid collections of *Daffodils* exhibited by Messrs. Barr & Son, King Street, Covent Garden; Veitch & Sons, King's Road, Chelsea; Collins Bros. & Gabriel, 39, Waterloo Road, S.E.; and T. S. Ware, Hale Farm Nurseries, Tottenham. These have been so frequently described that repetition is unnecessary. Large bronze medals were awarded to Messrs. Barr & Son, Messrs. Veitch & Sons, Mr. Ware, and a bronze medal to Messrs. Collins Bros. & Gabriel.

Amongst other miscellaneous exhibits were a fine collection of *Roses* in pots from Messrs. Paul & Son, The Old Nurseries, Cheshunt, for which a large silver medal was most deservedly awarded; a handsome group of greenhouse plants and a collection of *alpines* from the same firm, to each of which a bronze medal was adjudged; and some charming baskets of cut *Roses* from Mr. Walker, Thame, Oxon, who received a small silver medal.



HARDY FRUIT GARDEN.

ALTHOUGH the fruit of *Apricots* may by this time be set and swelling nicely, neither disbudding nor pinching of the young growth should be done till the season is somewhat more advanced, for it is a backward spring, and we cannot be too cautious in refraining as long as possible from thinning growths, which may give some shelter to fruit and foliage. The same advice is applicable to *Peaches* and *Nectarines*, from which we do not remove a shoot or leaf till the fruit is swelling, and we have reason to suppose there will be no more leaf blister from cold winds. It may be opportune to explain to new subscribers to the *Journal* that the blister of young foliage from which *Peaches* and *Nectarines* so frequently suffer at this season of the year is much increased by exposure to cold north-eastern winds, and we therefore not only do all that is possible to screen the trees from it, but also leave all the outer shoots and breastwood untouched as long as possible to afford additional shelter to the side shoots which we wish to retain from bearing fruit next year. Blossom buds generally have been kept in abeyance by the cold wind; night after night has the thermometer been near the freezing point, and the bitter north-easters have for once done some good in retarding the swelling buds, and we still feel hopeful of a fruitful year. It is impossible, however, to avoid feeling somewhat anxious, for the sun gains power daily, the buds must soon be open, and then will come the critical time upon which will rest the success or failure of the fruit crop.

Strawberries, *Raspberries*, *Gooseberries*, *Currants*, and *American Blackberries* are all starting freely into growth, and all will derive much benefit from frequent drenchings of sewage from the present time onwards till the colouring of the fruit. It is the early and regular use of liquid manure that imparts vigour to leaf and fruit, and leads to the fullest possible development of the crop. We do not intend to infer that good, even fine fruits, may not be had without the use of sewage, for it undoubtedly can, but with it we get larger fruits, and the last fruits, often small and worthless, are also rendered really useful. To those who have made no provision to save and turn the house sewage to account we would say, At once make a small cistern to contain enough for your daily requirements in the garden in the most parching summer weather, with an overflow pipe to conduct the waste sewage away in winter, so that it may not become a nuisance, and insist upon having the sewage pipes to the cistern brought outside, and if necessary around the house, but never under it, as is so frequently done.

FRUIT FORCING.

PEACHES AND NECTARINES.—Early House.—The trees from which ripe fruit will be gathered from the middle of May and through June now need the final thinning of fruit and wood, leaving only one fruit to each square foot of trellis covered by the trees. *Nectarines* may be left a little thicker, and only wood sufficient for next year's bearing or the furnishing of trees extending. The young shoots that have been allowed to make unrestricted growth during the stoning period, which usually extends over a space of about six weeks, should be neatly tied to the trellis. Shoots from the bearing wood of the current year may be allowed to grow evenly all over the trees without being stopped, as they will become the fruit-bearers next season; but other growths between them and the terminals must be removed, as the former require more room for the development of their leaves. Do not stop the terminals until they reach the extremity of the trellis; but shoots retained to attract the sap to the fruit, which will be removed after that is gathered, should be pinched, as it will increase the size of the fruits after the last swelling for ripening. Carefully supply the roots with water if the trees are vigorous, or with diluted liquid manure if a stimulant is needed, which, as the strain of the crop in most cases is great, will mostly be advisable, but this can only be determined by the cultivator. Trees with a good spread of foliage exposed to the sun and the roots in properly drained borders will require large quantities, as the chief cause of the fruit ripening prematurely is an insufficient supply of moisture to the roots through the last stages. When the fruits are fairly on the move for the last swelling the temperature by day may be considerably increased, provided the trees are allowed to rest by night, when a circulation of air will add greatly to the colour and flavour of the fruits. Syringe twice a day with clear soft water, as water containing lime disfigures the fruit, and endeavour to have the foliage quite free from red spider when the ripening stage necessitates its discontinuance.

Succession Houses.—Avoid trying to hasten the stoning process, which will be the condition of trees started early in the year, as the fruits must have time, an equable temperature, and generous treatment. Continue disbudding until every shoot that is left will have full space for development and exposure to the solidifying influence of light and air. Disbud the trees in late houses, and thin all small and badly placed fruit, leaving a fair per-centage for choosing from when the most promising take the lead. Syringe liberally when the weather is fine, and ventilate by night and day when it is desired to have the fruits as late as possible.

CUCUMBERS.—In most gardens fruits of these will be plentiful, the chief object being to maintain a good successional supply throughout the season. This can readily be effected by attending to the usual stopping,

thinning, and judicious cropping of the plants during the season, with an occasional top-dressing of light loam, to which a third of short well-decomposed manure has been added, and copious supplies of liquid manure given to the roots when necessary, which in some cases will be daily and in others weekly, or more frequently according to the extent of the root space. If plants are growing vigorously in narrow borders with plenty of drainage, and having the bottom heat supplied by hot-water pipes, there is little fear of giving too much water, whilst with plants growing upon a bed of fermenting materials, and with scope for root-action, the case is reversed, the plants requiring comparatively little water at the roots. The syringe must be employed twice a day during bright sunny weather, and air admitted freely on all favourable occasions, which will cause the plants to make a short-jointed growth, but avoid cold winds and cutting currents. A slight shade may be given for a few hours in the hottest part of the day. Keep the plants free from insects by the free use of the syringe; but if green and black aphides cannot be subdued in that manner fumigate on two or three consecutive calm evenings, having the atmosphere cool and the foliage dry, being careful not to give an overdose.

CHERRY HOUSE.—The trees having been started and treated as advised in previous calendars the Cherries are ripening rapidly; indeed, those in the most forward part of the house are fit to gather. The fruit, therefore, under those conditions must be kept perfectly free from moisture in any form. The ordinary dampings, however, may be continued in the morning and afternoon, provided ventilation be left on the house at its apex, to prevent condensation taking place in a manner that will affect the fruit. Ventilation should be free at all times according to the weather, and whenever favourable allow a constant current of air to pass through the house. If black aphides appear they must be destroyed by dipping the infested leaves or shoots in tobacco or quassia water. Some netting placed over the ventilators will be necessary to exclude birds, which must have meshes small enough to exclude sparrows, as they are the most daring in their depredations. As the shoots elongate those which are to be retained must be tied in, and those not required should be stopped at the fifth or sixth leaf.

STRAWBERRIES IN POTS.—The fruit is now plentiful and fine, especially Mr. Radclyffe, one of the very best varieties for forcing. President and the later kinds, as James Veitch, British Queen, Cockscumb, and Sir C. Napier may be pushed forward, as the light is now very favourable. To grow late-forced Strawberries well, and these in particular, they should on the appearance of growth be raised near the light, and set wide enough apart to admit of a free circulation of air by having the plants set so that their leaves do not touch each other, as their long leafstalks and flower spikes have a tendency to become weakly and drawn if they are kept too closely together. It should be borne in mind that these do not like hard forcing, and they have the advantage of early varieties in keeping for a few days when ripe in a cool house, with the fruit turned from the light. For nobleness of appearance James Veitch is worth a place. It always makes an acceptable dish, and is a capital traveller. In order to give the bright sparkling scarlet colour so much valued in Strawberries, the fruit should be ripened in a high temperature, 65° to 85° or 90° in the full sun. Afford liquid manure liberally when the fruit is fairly swelling, and allow the fruit for home use plenty of time to thoroughly ripen, whilst that for packing should be gathered as soon as fully swelled and coloured.

PLANT HOUSES.

Gardenias.—As these plants discontinue flowering they should be cut closely back and started again into growth in brisk heat where the system of retaining old plants from year to year is practised. A few of the youngest and best-formed specimens should be grown without pruning, and if their growth is brought to completion early in the season they will yield a good number of their fragrant flowers during late autumn and winter. It is a good plan to restrict plants grown for this purpose at their roots, so that their growths are short and sturdy. The young stock for the main supply of flowers next spring, if raised and treated as previously directed, will now be ready for placing into 6-inch pots. If these plants are grown in heat and moisture they will make bushy specimens 18 inches or more over by autumn, and produce from twenty to thirty flowers each. Those plants rooted early in the year must be pushed forward with all possible speed; stopping the shoots to induce them to branch, and repotting as the roots advance, are the main points to be attended to. When the plants are established in their pots give liberal supplies of water, and syringe twice daily during bright weather. Use for a compost good fibry loam three parts, one part leaf soil, a little decayed manure passed through a fine sieve, and sufficient coarse sand to keep the whole porous.

Dracenas.—Plants that have become bare at the base and possess good heads should have them taken off and rooted, when they will in a very short time make fine well-furnished specimens. The heads can be rooted by mossing them round and nicking them just below, and in a very short time they will fill the moss with active roots, when they may be taken off and potted. Another, and perhaps a better plan, is to take them off and insert them in bottles of tepid water, stood in a close moist structure where they can be shaded from the sun. By either of these systems they can be established without losing a leaf. Shoots of *D. gracilis* and *D. Goldiana* will root with certainty if taken off where the wood is not too firm, inserted in small pots of sandy soil, and placed in the propagating frame. Young plants wintered in small pots and transferred into 5-inch pots early in the year are now growing rapidly, and have filled their pots with roots. If large plants are required transfer them at once into pots 2 inches larger. If good specimens are needed

plenty of root space must be given, or they are liable to become checked and stunted. The roots and stems of plants that have been rendered useless by employment for various decorative purposes in the dwelling house should be cut into lengths and inserted amongst sandy soil in pans for further increasing the stock of plants for the various purposes required. *Dracenas* do well in a mixture of loam and peat in equal proportions, with about one-seventh of old Mushroom-bed refuse and sand added. The treatment recommended for these plants will suit *Dieffenbachias* required for the same purpose.

Crotons.—These root freely the whole year round, and where quantities are required in small pots for purposes of decoration it is necessary to propagate a batch of plants frequently. Good tops are decidedly the best for this purpose, as they possess large well-developed foliage, for they can be rooted without losing a leaf if inserted in a close and warm propagating frame. When good tops are taken they should be inserted in the pots in which they are to be employed. It is often difficult to procure sufficient good tops for this purpose, and therefore side shoots are rooted and grown for supplying well-developed tops, which are not long before they are ready for decorative purposes after they are once rooted. When the plants are required for standing singly they must be shapely, and in order to accomplish this they must have proper room for development. Grow the plants as near to the glass as possible, fully exposed to light and sunshine, or they will fail to colour well. Well-coloured *Crotons* are very effective in almost any arrangement.

Impatiens Sultani.—There is no question about the usefulness of this single Balsam for decoration either in the stove, intermediate, or cool house. For room-decoration it is useless, as few plants are more quickly destroyed by gas, the flowers falling off in a very short time. Seedlings are the best and make the most bushy specimens, as they branch with greater freedom than those raised by means of cuttings. A good batch of plants should now be raised by one or both means and grown for a time in heat for conservatory decoration, where they will be found very effective, and continue flowering freely for a long time. Insert cuttings singly in small pots, for they root with greater freedom on a shelf shaded from the sun; if placed in the close propagating frame they are liable to suffer from damp. This plant will do well in any moderately rich compost.

Achimenes.—The tubers started as directed now yield abundance of cuttings. These should be taken and inserted together in 5-inch pots or pans, and then grown for a time in heat. They will make valuable compact dwarf specimens for conservatory decoration towards the end of June. Few flowering plants are so useful for conservatory decoration as *Achimenes*, and plants raised by means of cuttings are always dwarf in comparison to those grown from the tubers. Generally they are a week or two longer before they come into full beauty. The cuttings root freely in a Cucumber or Melon house without the confinement of a close frame if shaded from the sun.

THE BEE-KEEPER.

ECONOMY IN BEE-KEEPING.

It is impossible to overvalue the advantages of a liberal education, for however valuable familiarity with the classics may be we have often wondered whether it might not have been better for us to have been taught how to keep accounts, instead of leaving us to pick up this knowledge in after life. We would advise all bee-keepers to keep accurate accounts if they want to make bee-keeping pay; for to the novice in bee-keeping, with all that enthusiasm so essential to success, there are difficulties to be passed and temptations to be overcome which he, in his ignorance, hardly dreams of.

Bright visions of enormous profits, far exceeding the simple beauty of the three per cents, dazzle his sober eyes, and reckless of consequences he plunges into buying costly hives and various bee appliances, only to find too often that he has needlessly wasted his money, and that at the end of the year he has very little to show for his outlay.

If he is a sensible man taught by experience—that severe mistress—the next year he is more cautious, finds out from some still more experienced bee-keeper what appliances are absolutely necessary, and shuts his eyes against all the captivating catalogues of the hive-makers, and in amusing letters to the *Journal* pours out the vials of his wrath upon them. The question naturally arises, Who is to blame?—the novice or the hive-makers? and in nine cases out of ten we should say the former. The standard of honesty differs in this as well as in all other trades, and it may be that our friend has been unfortunate in his choice; but from a long experience in bee-keeping, and in getting others to start as bee-keepers,

we can quite corroborate what Dr. Walker said in his paper on "Feeding Bees." "I find young bee-keepers do not spare their money in buying all kinds of bees, any new-fangled hive, or useful or useless appliances." Again and again we have advised economy, mildly suggested that it were far better for the novice to undertake two or three hives and look after them properly, than mismanage an apiary of some ten or fifteen hives. Again and again we have suggested that the buying of imported Ligurians is not in itself a sign of genius—at all events, as far as bee-keeping is concerned—nor that it is necessary to buy all the furniture depicted in a catalogue; but in spite of all our best endeavours they will "gang their ain gait," and buy their experience for themselves. With a lively recollection of our own experience, and in extenuation of our own case, be it remembered, that it was long before the formation of the B.B.K.A. that we started bee-keeping; we can fully sympathise with the ill-directed enthusiasm of the novice, and our object is how to curb this enthusiasm as far as his pockets are concerned.

Like Uncle Dick in "David Copperfield," who strove in vain to steer clear of Charles I., it is nearly impossible for any bee-keeper to avoid the much-vexed question—Which is the best hive? If we believe one man, presumably sane, though the wildness of his sentiments fail to convey that idea, we ought to burn every straw skep in Great Britain; if we would follow the advice of another we ought to shun the bar hive as an invention of the—hive-maker. Having tried most kinds of hives, from the old-fashioned straw skep to the capacious Pettigrew, from the single-bar hive to one containing some thirty bars, and also the Stewarton hive, we prefer the bar-frame hive containing some ten bars as the most useful for all purposes. Not that we deny for one moment that the Pettigrew system, scientifically managed, does produce astonishing results; but we contend that the same science and the same management devoted to the bar-frame hive system would produce even more astonishing results. It has been said—but doubtless our statement will be denied—that even Mr. Pettigrew himself, towards the end of his life, was convinced of the superiority of the bar-hive system. For the novice its fatal facility of inspection in season and out of season is one of its greatest disadvantages. We have heard of one bee-keeper showing his bees by lamp-light to an admiring circle of friends! "The force of folly could no farther go." This, of course, is not the use but the abuse of the system, from which the skep system is to a great extent free. It reminds one of children who plant seeds, but who are continually pulling them up to see if they are growing, and if they do not survive this maltreatment it would be foolish to blame nature or the seedsman. It is true that Herr Gravenhorst, one of the most advanced German bee-keepers, uses straw hives, but then they combine the advantages of the straw skep with those of the bar hive, as all the combs are moveable, and, as he explained to us when we asked the question, the reason of his using such hives was that there was a better market in Germany for run honey than for comb.—THE SURREYSHIRE BEE-KEEPER.

(To be continued.)

HOW CLOSE IS THE CONNECTION?—THE HONEY COMPANY AND THE NATIONAL BEE-KEEPERS' ASSOCIATION?

I AM surprised that "A Local Adviser," on page 279, comes out to answer me with assertions after I clearly ask for proofs, and, what is more, pleads ignorance of what he writes about. He says he gets his Journals through Smith's, and yet receives Blow's and others' catalogues (very likely), and is not a member of the B.B.K.A. Perhaps he is a member of some county association, and possibly his name as a local adviser has been published in the *Bee Journal*; if so, his name and address can be seen by anyone who cares to do so. But there are persons who are not members of any association who get their *Bee Journal* direct from Mr. Huckle, which I was alluding to, the names of whom can only be had from him and are in the possession of Mr. Blow. I asked if this gentleman is an exception? if not, can anyone who wishes have a list also? It would be more to the point if Mr. Huckle or Mr. Peel answered this question.

There is one sentence in his letter which all would do well to consider

—about people using the *Bee Journal* to puff their wares. I intend to improve on this in another letter. Of course it does not look well for a hivo inventor to describe his hive and give it a "puff," and then say he does not make them but that they can be had from Mr. So-and-so, and Mr. So-and-so says in the advertisement columns that he is the only authorised maker, it being understood between them that he gives a royalty to the inventor, who is posing as a public benefactor, describing his hive free for all to make, and when one of them does happen to let it out that he receives a royalty for his influence in causing business the editor comes out a few numbers later with a statement that he gets nothing at all, but that he does it all for the public good. Of course, "A Local Adviser" does not like these things.

The N.B.B.K.U. which he alludes to, in connection with Mr. Hewitt, is a distinct scheme to supply the public with pure British honey only (who may be willing to pay more for it), and to secure this extra market value to the producers and not to a "honey ring." I hold that if the public can depend on what they are buying, foreign honey will stand no chance; but if the Honey Company is to send out foreign honey (to say nothing about glucose) labelled with the British Isles as a trade mark, and so "balance the price between British and foreign honey," as the champions of the Company propose, there will be no profitable British bee-keeping. How could we compete with Cuba, where 600 lbs. per stock is the average from December to March, and not $\frac{1}{2}$ d. per lb. expenses to get it to Liverpool? How is it to be to the interests of the British producer to have this honey flooding the country, put up in "proper bottles and labels which will take the eye," and cannot be well discovered by sight from British, say by the Honey Company, just as he is getting ready for his harvest? Of course, they cannot produce in Cuba, Sycamore, Heather, Clover, or other kinds of British honey; but these are not to be taken into account by the Honey Company. If we fail here through a bad season to get honey they say it would be very unbusiness-like to tell their customers that they cannot supply any more (Heather or Clover) honey, but will rather send them some foreign honey instead. Is this the way to educate the public to appreciate the pure British product? Will they not rather disgust them? Could anything be more alarming than this balancing of the prices? Even the Americans are up in arms demanding a heavy import duty on Cuban honey, lest it makes their honey lower still. They evidently do not like 630 lbs. of honey per average stock in ordinary seasons, with no winter difficulties or expensive hives either, along with cheap negro help, to compete with them. They also talk of bringing down the price to such a level as to increase the demand by its cheapness; but will they benefit anyone but themselves? The only legitimate way to encourage bee culture is to get as good a price as possible for the honey, and if the price obtained is a very paying one the profits will induce others to enter the field until the supply exceeded the demand; then the price would naturally fall, until the supply and demand were balanced.

"A Local Adviser" has misunderstood those remarks of Mr. Hewitt about its not being to a bee-keeper's interest to have others share his field, as the context will show. If he will follow his example, find hives and all appliances, and give practical lessons in profitable bee culture for nothing to benighted bee-keepers, and then teach the cottager how to make his own hives and appliances also for nothing, instead of being a local adviser, persuading everyone to keep bees, telling them of the glorious profits and pleasure, and selling them expensive appliances, he might have some right to sneer at him.

Since writing the above I note the letter from Dr. Walker in the issue for the 9th inst. I am surprised to see him say the N.B.B.K.U. proposes to raise or keep up the price of honey by means of "strikes." Nothing of the kind has been proposed; we simply want to get the price people are willing to give for our pure guaranteed produce, whatever that price may be. He has been improving on the remarks of the editor of the *British Bee Journal* for April 1st, which are as follows:—"There are not wanting persons who would advocate something like a honey ring or a trades' union system, by which they would fix the price, but their policy is a shortsighted and selfish one;" but as he and Mr. Peel are, in fact, forming a "honey ring" they may well think everyone else is. Is not *their* policy a "shortsighted and selfish one?" I fail to see where our policy is selfish. We seek no private profits over what each one can get on his honey. We are going to provide fairs and markets all over the land for honey, just as there are corn markets, Onion fairs, goose fairs, horse fairs, &c.; but as yet only one honey fair, and that only for Lincolnshire. According to Dr. Walker's account, that ton of honey he speaks of would be worth at least 1s. per lb. wholesale to take the lot. How his mouth must have watered to see it offered for 6 $\frac{1}{2}$ d. Does he think it is just for him, as a committee member of the B.B.K.A., which claims to be devoted to the encouragement of bee culture amongst the poorer classes, to endeavour to share in the proceeds therefrom? Would it not be more manly to have introduced the owner of this ton of honey to some broker in the wholesale trade, who, for about half or 1 per cent. commission, would have got its full value, and if he was in immediate want of cash and could not wait till it was disposed of to advantage, have got him an advance on it from some banker? The B.K.U. will arrange all these matters for its members. Thus, if we get a good crop and its members do not clear out at the fairs, &c., and cannot wait until it is required—say, in early spring—it can be sent to the various produce depôts, and two-thirds or three-fourths of its value borrowed on it from the bank, just as corn, wool, tea, and other produce is manipulated or financed; thus we shall be able to hold our own surplus crops from a good season over to a bad one. All this we can do if bee-keepers combine together so as to make each operation worth the venture. We are pro-

posing nothing new. All these things are in daily operation, except for home-produced honey; it is even applied to foreign honey, or it could not be imported. I may add that I never doubted the shares would all be taken up, as the scheme has been announced so widely.

It is absurd for the Honey Company to talk about "supply and demand" and "market prices." Whoever heard of a "market" consisting of a multitude of sellers and only one buyer, and that buyer expecting all bee-keepers to send their produce from all parts of England, Scotland, or Ireland to him carriage paid to be distributed again? It would be absurd for sellers in out-of-the-way places to expect to get more than 2d. per lb., notwithstanding Dr. Walker's assertion that a "small" profit on honey will return a handsome one on capital. I extract the following from the *British Bee Journal* for March 15th:—"Bee-keepers of the future will have no difficulty in disposing of their honey, though they must not expect to get so much per pound for large quantities as for small," when selling to the Honey Company. These are the words of its Chairman, and if this is a specimen of its business capacity it does not augur much for the prospects of profit. Any lad after being two weeks in a wholesale grocery would treat the writer of such with contempt. The very life of the wholesale trade consists in buying in large quantities and selling in smaller ones. If they buy small lots at the same rate as large ones they are practically working for nothing, as each small parcel requires the same trouble, booking, and correspondence as a large one, and this is why wholesale dealers cannot buy British honey in small lots. But to seriously propose giving more per lb. for a small parcel than for a large one requires no comment, and is only in accordance with their other notions.—A HALLAMSHIRE BEE-KEEPER.

THE NATIONAL BEE-KEEPERS' UNION.

I READ in your last issue a letter from "A Lancashire Bee-keeper," in which he spoke of the promoters of a National Bee-keepers' Union, and their singleness of purpose. Will he let us know who these promoters are? Why do they keep in the background? Are they ashamed of their names being made public? I see that the Editor of the *Bee Journal* has offered to publish a list of their names if one were sent to him, but no such list has yet appeared, so I conclude that none has been sent.—A STAFFORDSHIRE BEE-KEEPER.

HIVE WITHOUT CROSS-STICKS.

I HAVE a large Pettigrew skep, 16 by 12 ins., which in very early spring was only half full of comb, but is now nearly, and will soon be quite full. There are no cross-sticks in it to support the combs, and I desire to know if there is any danger, the combs being new, of their breaking down if the hive is inverted for artificial swarming early in May if ready.—X. Y. Z.

[Prepare a few paper cushions about 3 inches long, an inch or so broad, and about half an inch thick. After the hive is inverted take a carbolised sheet of brown paper, and lay it flat upon the combs to drive back the bees. Now push the cushions between the combs, which will keep them in their places and prevent their swaying and breaking. Fold the paper, or fill the little envelope so that the cushions will be springy. Be careful and turn the hive when inverting upon the side towards which the ends of the combs rest. If carefully manipulated there is not likely to be any collapse of combs, unless the day is very warm, when manipulation should be carried on in the shade.]

TRADE CATALOGUES RECEIVED.

James Cocker & Sons, Sunnypark, Aberdeen.—*Catalogue of Spring Flowers for 1885.*

Continental Horticultural Company (J. Linden), Ghent, Belgium.—*Catalogue of Plants for 1885 (Illustrated).*

Bruant, Poitiers, Vienne, France.—*Catalogue of Plants.*

Barr & Son, 12 and 13, King Street, Covent Garden.—*Catalogue of Daffodils (illustrated).*



* * * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper

only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Address (T. T.).—Your letter has been forwarded in accordance with your wish.

Rhubarb (J. W., Pershore).—Rhubarb is certainly not a fruit, the portions used for culinary purposes being the fleshy leafstalks. It is admissible in a collection of vegetables, and is usually shown in that way when there are no classes devoted to it.

Blight in House (E. C., Malmesbury).—The specimen enclosed has upon it examples of a Coccus or scale, which is too immature to be specifically named, but the leaves also bear traces of a fungoid growth, perhaps due to the insect attack, or it may be unhealthiness from some other cause which has favoured the spread of the scale amongst your plants. Those not too tender to bear such treatment should be cleaned with a solution of softsoap, to which some tobacco water has been added, or with a weak solution of paraffin. But it is possible, from the description you give, that the greenhouse is so far infested that the only remedy really effectual will be the removal of the plants and a subsequent fumigation of the house with sulphur.

Native Guano (E. S.).—If you cannot accept the evidence of gardeners of such standing as Mr. Smith of Mentmore, we can only advise you to try the manure for yourself. All fertilisers have not the same effect on soils differing in character. A manure may suit one soil admirably, and yours not so well. *Doronicum austriacum* is distinct from *D. caucasicum*, and is named in several works upon hardy plants. *Hebeclinium ianthinum* is sometimes seen under the names *Eupatorium* and *Conoclinium*. It belongs to the natural order Compositae.

Soil for Chrysanthemums (Cambridge).—Cocoa-nut fibre and cocoa-nut fibre refuse are two different materials, the former being practically worthless for potting purposes; the latter, which resembles soft brown mahogany sawdust, being very useful, but we should not use it for Chrysanthemums after shifting them from the small pots unless the soil were very heavy indeed. For protecting the drainage a layer of fibrous turf with the soil particles knocked out, then sprinkled with soot, is much better than the fibre refuse. Cannot you get some manure sufficiently dried and decayed for rubbing through a sieve of an inch or three-quarter-inch mesh? If you can we advise you to use it instead of the fibre refuse. If the loam is heavy also add a little wood ashes. It should be turfy, and if inclined to be poor soak it with strong liquid manure and let it get moderately dry before using. If you have potted the plants you need not fear the fibre refuse will induce fungus growth to do injury, but it has not the sustaining power requisite for supporting the plants. The compost may consist of a seventh part of decayed manure, a pound of bonemeal to half a bushel of soil, with nearly a 5-inch potful of soot and half a peck of wood ashes if the loam is very strong.

Perpetuating Cinerarias (E. F., Hackney).—Only really superior varieties are worth saving and increasing by offsets, as seedling plants grow so much more freely. For producing strong offsets the plants should be cut down as soon as their beauty is over, as if left to ripen all the seed that forms this often exhausts them. A cool frame is a suitable position for the cut-down plants, frost of course being excluded, and not an insect must be allowed on the young growths that start from the roots. For encouraging the suckers to root an inch or two of the old soil is removed from the pots and fresh rich compost added and kept regularly moist. We have often planted Cinerarias out in June in rich soil in a shaded border rather deeply, and they have produced a vigorous lot of offsets, which have formed compact flowering plants for the following spring. The suckers, as to potting, watering, and shifting, require the same treatment as plants raised from seed.

Early-forced Peach Trees Failing (G. M.).—It is difficult to account for the failure, and we can fully sympathise with you, as we had a similar difficulty a few years ago. The trees were healthy, and were subjected to the same treatment as during the years they produced satisfactory results, yet the fruit fell as yours have done when the size of horse beans. We bore this two seasons, and then determined to kill or cure. In early September we removed the whole of the soil down to the roots, having previously shaded and closed the house. The roots were then lifted, commencing at the point most distant from the stem, and as they were laid bare and on one side they were covered with wet mats. In this way the whole of the roots were lifted except for a space of about 18 inches round the stem, where only the soil was picked out without injuring the small roots or fibres. The drainage was found perfect, otherwise it would have been taken out and renewed. We cut under the stem to sever any roots going straight down but found none. About a sixth of lime rubbish was mixed with the soil, and it was raised to within a foot of the intended level, then the roots were laid out, some of the strongest cut away, and the soil worked in amongst the others, half the roots being disposed of in the first layer, which occupied about 6 inches depth. The remainder of the roots were similarly arranged in the top 6 inches of soil and made firm. A thorough soaking of tepid water was then given, and the surface mulched with a couple of inches thickness of short manure. The house was kept rather close, still shaded and syringed, and the foliage which had become limp and hanging recovered in the course of a few days, when it was seen that the roots were starting afresh. The shading was removed and ventilation given by degrees, so that in a fortnight the trees could bear full exposure and ventilation. The foliage came off freely, and no buds even of Noblesse were lost. The set next year was very full, we believe every blossom set and swelled a fruit, which were left too long, as we were afraid the majority would fall before they reached the size of Walnuts. They had to be removed by pecks, and not a fruit fell in stoning. This lasted for about three years, when the trees did not swell the set fruits as we wished, and not waiting for another failure the trees were lifted again, with the best results, and subsequently we lifted them every third year; indeed we find they were lifted four times in a dozen years, therefore our advice to those having Peach trees in an unsatisfactory fruiting state is to lift with care and judgment as soon as the wood is firm, and it will be productive of great good, the effect being certain and immediate.

Manures (T. J.).—Your paper contains several statements which may be misleading. For instance, you say “the five principal food elements plants use,” which ought to have been elements required to be applied to the soil, these elements being not by any means the principal means of sustenance. About the statement that nitrogen in the air is drunk in by the leaves in the shape of ammonia, it may be noted that this question is not very well cleared up, but it is supposed that nitrogen from the atmosphere is used as nitrogen, and nitrogen from the soil in the shape most probably of nitrates. It is only some plants, moreover, that make much use of atmospheric nitrogen. We think you are wrong in placing so much weight on “phosphorus” as opposed to nitrates. The fact is the only sensible mode of employing so-called artificial manures is to abstain from using any one of them separately to any extent. We have no doubt your garden experiments were rendered nugatory by overlooking this primary fact. There is much that is of value in your paper, your remarks on humus being good, and the value of urine as a manure requires to be often stated. We would advise you to dispense with nitrate of potash as a manurial agent. It is expensive, and gives no better results than does sulphate of potash or the muriate. Plaster of Paris is a good manure in some cases. Weed-growing to increase the productiveness of land is a proposition of doubtful utility, and we think you are wrong in your ideas respecting heavy dung dressings. If ground is heavily cropped farmyard dung is indispensable in heavy dressings.

Climbers for an East Aspect (S. T.).—A trellis of stout wire will answer best for your purpose. Before covering the house front with Portland cement drive in iron staples 4 feet apart, leaving them far enough out to project through the cement, so that the wires can be fastened to them after it is put on. A row of staples at the top and bottom and five rows between, or forty-two staples for each space of 20 by 24 feet. Strain the wire diagonally so as to make a diamond pattern, both for stability and neatness, and give it two or three coats of paint. The climber you mention is probably *Ligustrum coriaceum*, of a distinct, compact, and very neat habit of growth. But for the beauty of its flowers and bolder appearance *Ligustrum japonicum* is decidedly preferable, only it requires more care in pruning and training to keep it within bounds. Four feet apart is close enough for the permanent health and vigour of the climbers, and this distance will enable you to have eight plants arranged in the order they are named—*Lonicera flexuosa*, the sweetest of all Honeysuckles; *Ligustrum japonicum*, (Japanese Privet), *Jasminum officinale* (White Jasmine, very fragrant), *Escallonia macrantha*, *Lonicera brachypoda*, almost as sweet as *L. flexuosa*, *Berberis Darwinii*, *Jasminum nudiflorum* (Yellow Jasmine, flowering in winter and early spring), and *Ceanothus rigidus*, quite hardy enough for an east aspect in Surrey, and very lovely in spring with densely clustering pale lavender flowers. One, three, five, and seven are deciduous, the others arranged with them alternately are evergreen. Let the growth mingle, and you will thus have a clothing of green foliage in winter, and the fresh growth and beauty peculiar to the other seasons of the year as well. Plant carefully as soon as possible in rich soil 3 or 4 feet deep and wide, and see that there is an outlet for rain water, which is apt to accumulate about the foundations of buildings.

Lime for Grass Land (T. Griffiths).—On land where the soil is deficient in lime or only existing in small quantities, lime is one of the most valuable manures that can be applied. Land that has been frequently top-dressed or manured with vegetable matter for a series of years would be wonderfully improved by a good dressing of lime. We know fields and gardens that have been manured heavily for years, and yet failed to produce good crops, but a heavy dressing of lime restored them to a high state of fertility. You could not do better than add about 10 per cent. of lime to the manure and vegetable refuse, mixing the whole well together before applying it to the land. The grass land should have been top-dressed before now if intended for mowing this year. However, it would be better to apply it at once than to leave it until another season. The condition of fields that were dressed early show at the present time a very marked improvement over those that have not been done, or only just been attended to.

House for Forcing Strawberries (D. E.).—In very few gardening establishments where Strawberries are largely forced are there to be found any other convenience than shelves in forcing houses and heated frames such as you describe. The plants do much better in frames, and produce finer fruits with greater certainty than is the case upon shelves after the season has advanced and the sun has great power. On shelves when the sun is very bright and hot not only do the flowers fail to set satisfactorily, but the fruit is often seriously injured by exposure to the sun. A heated frame where air can be admitted freely is admirably adapted for the purpose you have in view, but if you intend erecting a structure on purpose we should advise a low span-roofed house, or a three-quarter span, with a walk down the centre and a stage on each side. You could arrange a wide shelf over the walk capable of accommodating two rows of plants, which could be lifted from the beds to the shelf to ripen. A house 9 feet high and from 10 feet 6 inches to 12 feet wide outside (including the walls) would be of a suitable size. If the side walls were 2 feet 3 inches above the ground level you could arrange small front lights for the purpose of admitting air when required. The reason we advise a house of this description is not only because you could get at the plants and attend to their wants better than in a frame, but because the house could be utilised for a variety of purposes after the Strawberry season was over to which the frame could not be applied.

Gymnostachyum Culture (G. H.).—These are of easy cultivation, and can be successfully grown by anyone having the convenience of maintaining a stove temperature. They are easily propagated by cuttings, which root quickly if inserted in sand and placed in brisk heat in a close frame or under a bellglass and well shaded. After the plants are well rooted specimen pans can be made up with a number of them. The centre of the pan should be elevated considerably, but this should be carried out according to taste. They can be grown to look well in baskets or in small pots. They delight in a light soil, which should consist of fibry peat, the small particles of soil being shaken out, sphagnum moss, charcoal, and plenty of sand. While growing abundance of water should be given and the plants liberally syringed. They grow with the greatest rapidity in a close moist atmosphere well shaded from strong light. When specimens are made up

and the plants have grown a little the growth should be pegged down, when the stems will quickly throw up a number of roots. These plants are very beautiful when grown in connection with small-growing Ferns to cover vacant walls in stoves. They also look very attractive when growing amongst the moss on Orchid pots, but must be kept in due bounds. *Gymnostachyum* will not fail to grow luxuriantly if plenty of heat, water, shade, and a light compost is given them.

Marking Fruit (C. L. R.).—This is the produce of *Semecarpus anacardium*, is a large tree, 50 feet high, a native of the mountains of the East Indies, and is called Marking Fruit. What constitutes the fruit is the swollen receptacle, which, when ripe, is yellow, and is roasted in ashes and eaten by the natives. They have the flavour of roasted apples; but when unroasted they taste astringent and acrid, leaving a painful sensation on the tongue for some time. When unripe it may be made into good bird-lime by pounding it. The nut is heart-shaped and seated on the receptacle, black, and consists of a cover or shell composed of two skins—an outer and an inner—and a kernel. Between the two skins is contained a black, acrid, resinous juice, which, before it is ripe, is of a pale milk colour. This black acrid juice of the shell is by the natives applied externally to remove rheumatic pains, aches, and strains. In tender constitutions it often causes inflammations and swelling, but where it does not produce these effects it is an efficacious remedy. It is in general use for making cotton cloths, and the colour is improved and prevented from running by a little mixture of quicklime and water. The juice is not soluble in water, and is only diffusible in spirits of wine, for it soon falls to the bottom unless the menstruum be previously alkalisied, but then the solution is pretty complete, and of a black colour. It sinks in fixed oils and unites perfectly with them, but the alkaline solution acts upon it with no better success than plain water. The kernels are rarely eaten. The wood is reckoned of no use, not only on account of its softness but also because it contains much acrid juice, which makes it dangerous to cut down and work upon.

Names of Plants (E. R. C.).—It is impossible to determine the name of the Palm from such a poor specimen, but it resembles *Rhapis flabelliformis* and will succeed in an ordinary stove or warm greenhouse. The soil should be good loam with a little sand.

COVENT GARDEN MARKET.—APRIL 22ND.

A BETTER demand is now influencing our Market, and prices have generally risen With the present fine weather a good supply of Strawberries is reaching us.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples	½ sieve	2 6	to	4 6	Oranges	100	4 0	to	7 0
Chestnuts	bushel	16 0		0 0	Peaches	per doz.	0 0		0 0
Cobs, Kent ..	per 100 lbs.	55 0		0 0	Pears, kitchen ..	dozen	1 0		3 0
Currants, Red ..	½ sieve	0 0		0 0	„ dessert	dozen	0 0		0 0
„ Black	½ sieve	0 0		0 0	Pine Apples English ..	lb.	3 6		4 0
Figs	dozen	0 0		0 0	Plums	½ sieve	0 0		0 0
Grapes	lb.	6 0		10 0	Strawberries	lb.	4 0		8 0
Lemons	case	10 0		15 0	St. Michael Pines ..	each	3 0		7 0

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Artichokes	dozen	2 0	to	4 0	Lettuce	dozen	1 0	to	2 0
Asparagus	bundle	7 0		8 0	Mushrooms	punnet	0 0		1 4
Beans, Kidney ..	100	1 0		0 0	Mustard and Cress ..	punnet	0 2		0 0
Beet, Red	dozen	1 0		2 0	Onions	bunch	0 3		0 6
Broccoli	bundle	0 9		0 0	Parsley	dozen bunches	2 0		3 0
Brussels Sprouts ..	½ sieve	0 0		0 0	Parsnips	dozen	1 0		2 0
Cabbage	dozen	0 0		1 0	Potatoes	cwt.	4 0		5 0
Capsicums	100	1 6		2 0	„ Kidney	cwt.	4 0		5 0
Carrots	bunch	0 3		0 4	Rhubarb	bundle	0 4		0 0
Cauliflowers	dozen	2 0		3 0	Salsafy	bundle	1 0		0 0
Celery	bundle	1 6		2 0	Scorzoneria	bundle	1 6		0 0
Coleworts	doz. bunches	2 0		4 0	Seakale	per basket	1 6		2 0
Cucumbers	each	0 3		0 6	Shallots	lb.	0 3		0 0
Endive	dozen	1 0		2 0	Spinach	bushel	2 0		4 0
Herbs	bunch	0 2		0 0	Tomatoes	lb.	0 0		0 0
Leeks	bunch	0 3		0 4	Turnips	bunch	0 4		0 0



WAYS AND MEANS.

At most farms that are within reasonable distance by rail of the great centres of population an important way of obtaining quick returns and a steady inflow of ready money is found in the sale of milk. There is quite a cheerful air of business at many a quiet country station as the milk cans are brought in for despatch by the early morning train, and we were amused and interested while recently waiting for our train at such a station to hear the farmers exchange congratulations upon having a south wind with warm April showers. Well might they do so, for with the wind blowing steadily from the east for weeks together the pastures remained bare, and the hayricks were daily growing smaller or had vanished altogether upon many a farm. So small was the hay crop upon numerous poverty-stricken meadows last summer that the stock was exhausted in many an instance

long before Lady day. Fortunately hay has been cheap, but those farmers who have been driven to purchase hay even at the low rate of £3 to £4 per ton would surely do well to consider if they could not have done better—much better, had the cows been kept off the pastures later last spring, and part or all of this forced expenditure been avoided by having given the grass a dressing of the mixture of artificial manures so often recommended in the Journal. Good reason have we for this query, for we used the manures last year in time to get them dissolved or washed into the soil before the drought set in, with the satisfactory result of a full hay crop, so that now we can wait till the grass is abundant before turning out cows or cattle of any kind. Our forward crop of Rye also helps us to be somewhat independent of the weather, for the cows have now a full supply of it, and they do not care for the hay. The meadows, too, have a strong growth despite the cold, and already give evidence of the beneficial effect of the manures sown again this year in February.

Upon so many farms did we see the cows turned out upon comparatively bare pastures in March that we were led to ask if it is possible to help those who so evidently do not care to help themselves. What chance has the grass of growing? or how is it possible for cows to yield a full flow of rich milk under such faulty management? Now the growth of poor pasture is invariably late, whether the spring be early or not, and it is quite in vain to expect a fair crop from it without striving to enrich it systematically. It is too late to apply artificial manure this season unless a spell of wet weather should set in; but we cannot recommend that manure should be procured for such a chance. Folding with sheep is far more advisable, good results being quite certain to follow quickly. But where the grass is required for cows folding at the present time is impracticable, and it must remain in abeyance till autumn, when it may be done with the assurance that a strong early growth will follow next spring. This would be a step in the right direction, and now Tares, Lucerne, Thousand-headed Cabbage, and Kohl Rabi should be sown. Even more important are seeds for alternate husbandry, which may still be sown. See that they consist of the mixture of Grasses and Clovers already recommended, and remember that if there is to be any real improvement effected upon the permanent pasture, nothing helps to relieve it so much as a field of Italian Rye Grass, Cocksfoot, and Clover, which, when well manured, afford an early strong growth that is very valuable.

To the home farmer whose efforts are crippled just now by a want of food to keep his cattle in good condition and his cows in full milk, we would earnestly submit the great importance of a thorough systematic arrangement of the farm crops, and the careful elaboration of a well-considered plan for the entire year. Far too many farms are overstocked, and the bills for extra food are extravagantly high or the cattle are so low in condition that they will require the greater part of the summer to become healthy and sleek. This is no fanciful conception; we have met with both extremes, and can regard neither as right. Only a week or two ago we were at an auction sale of a herd of cows and young stock, all of them in such wretched plight that the very sight of them gave rise to feelings of indignation and disgust. Nothing could be practically more unwise and ill-considered than to have attempted wintering so many animals upon insufficient means. If only half or even a third of the number had been given the food which had barely sufficed to keep life in the whole of them more and better manure would have been made, and the few well-fed beasts would have proved infinitely more profitable than the whole of the wretched starvelings. Let our aims and ends, then, be more in proportion to ways and means. Small profits answer well enough with quick returns. The surplus stock of butter, eggs, and poultry upon the home farm mounts up quickly at this season of the year, bringing altogether a considerable sum of money, for all these things are in constant demand; poultry especially being worthy of our best care, the dealers

now making frequent calls, medium-sized chicks being eagerly bought to fatten at about £20 per 100, so that the production of a few hundred spring chickens is certainly a matter not unworthy the attention of every farmer. The broods must be reared upon fresh ground untainted by other broods, for that is the only way to avoid the losses by gapes, which commonly proves fatal to so many of the early broods.

WORK ON THE HOME FARM.

Most of the spring seeding has been well done; Mangolds, Parsnips, and Carrots are sown, and we have now to prepare for such later crops as Barley after Turnips, Swedes, and still later for white Turnips. Land reserved for this purpose may have still to be broken up and cleaned of foul weed roots. How this can best be done is worthy of our careful consideration. Large fields of from twelve to twenty or thirty acres with a tolerably level surface should be broken up by a steam cultivator, both for the sake of economy and for efficiency. No horsework can approach that of steam tackle in either respect. The best soil, too, is kept upon the surface. The air enters freely among the clods, which dry quickly, and require some watching, for in dry weather heavy clay soils require the harrows and roller at work very soon after the cultivator has done, in order that the rubbish may be cleared off and a fine deep tilth ensured. Deep rich soil well broken up, finely divided, and left not loose and open, but pressed tolerably firm for the growth of roots, answers best, and there can be no reason why it should not be prepared in the best way this season. In making mention of the use of steam tackle we wish to call attention to the heavy expenditure incurred upon so many farms for horses, and to inquire if some reduction is possible in the number.

Hay and corn harvest is the time when horses are most in request upon the farm, but even then we may effect a considerable saving of labour by making corn and hayricks upon any convenient place that is accessible during winter for the threshing machine and waggons, then by choosing fine weather for the threshing and carting of the straw the plan could present no insurmountable difficulty. By careful management in such matters the ordinary requirements for horse power will be somewhat relieved; if to the satisfactory degree of enabling us to do with one or two horses less than heretofore it will certainly be well. We would beg careful consideration of this important matter in time for an arrangement of plans beforehand. Ascertain closely the average cost of each horse for a year; also see what is the comparative cost of steam tackle, and then you will have a safe basis whereon to found your calculations. The use of steam tackle is still regarded as so great an innovation upon many farms that we can hardly hope to see it in general use yet, but we can point to many instances where it has first of all been introduced into a neighbourhood by spirited owners of land, whose work has been done so well and has been followed by such satisfactory results that conviction of its real value involuntarily steals upon the minds of the slow but by no means sure farmer.

OUR LETTER BOX.

Store Sheep (*Inquirer*).—Wether tegs or hoggets are what you require for grazing on your grass land from the present time till autumn, the prices ranging now from 30s. to 50s. each; and if you buy quickly before food becomes abundant upon the pastures, you may procure sound growing sheep for about 35s. Remember that you do not want the higher-priced fat sheep, but healthy lean animals to “grow into money.” Good land will feed six sheep per acre, rich land two or three more. The condition of the land must, therefore, be your guide as to number, only take especial care to under rather than overstock the land. Sheep bred in your own locality will best answer your purpose, and they can be had from a farmer or at a convenient market or fair. If you were to purchase Shropshires or other specially famous breeds you would have to pay so high a price that a certain loss would be inevitable.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				Rain	
	Barometer at 29s and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1885.		deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
April.											
Sunday	12	29.805	43.0	41.1	N.E.	43.0	55.4	38.9	81.8	31.8	—
Monday	13	29.942	39.9	38.5	N.E.	43.2	52.4	38.2	83.8	27.2	—
Tuesday	14	29.919	44.2	39.7	N.	42.8	50.4	35.2	77.6	28.2	—
Wednesday ..	15	29.889	42.6	39.3	N.E.	43.0	54.9	37.7	87.4	31.3	0.794
Thursday	16	29.789	43.0	42.7	N.E.	43.8	53.2	40.2	78.2	38.8	0.317
Friday	17	30.028	46.3	44.7	N.E.	44.2	64.2	39.7	102.7	34.8	—
Saturday	18	30.151	49.8	46.5	N.E.	45.2	68.3	38.4	107.9	30.6	—
		29.925	44.1	41.8		43.6	57.0	38.3	88.5	31.8	1.111

REMARKS.

12th.—Overcast early, then fine, with some sun.
 13th.—Generally cloudy, but some sun in the afternoon.
 14th.—Fair, but little sun.
 15th.—Dull early, fine day; rain in late evening and at night.
 16th.—Continuous heavy rain from early morning till 11 A.M., fair afternoon, rain from 5 to 8 P.M.
 17th.—Fine morning, but not sunny until the afternoon.
 18th.—Fine, bright, and warm.
 Heavy rain in the middle of the week, and rather damp throughout, although the wind was N.E. and the range of temperature large.—G. J. SYMONS.



COMING EVENTS

30	TH	Royal Society at 4.30 P.M.
1	F	
2	S	Antwerp International Exhibition.
3	SUN	4TH SUNDAY AFTER EASTER.
4	M	
5	TU	
6	W	

GOLDEN CHAMPION GRAPE.
GRAPES SPOTTING.

SIXTEEN or seventeen years ago no small sensation was caused in the horticultural world by the introduction of this grand Grape. Its handsome bunches and magnificent berries were alike the wonder and admiration of almost every beholder. Great, indeed, were the expectations formed as to the part it was to take amongst Grapes of the future. At that time almost every Grape grower was anxious to possess it, and few scrupled to pay their one, two, or three guineas for a Vine. Alas! in many instances "the best laid schemes,"

&c., were truly verified, and proportionately great were the disappointments and bewailments of those who had failed—some even to coax it into making a few leaves, and others who could grow it failed to obtain fruit, and most who had succeeded in growing and fruiting the Champion failed to get it without blotches or spots on the skin, that in consequence made it in many cases quite unfit to put upon the dessert table. In addition to these numerous failings its berries were said to be subject to splitting just as they were getting ripe, and thereby completed the chapter of disasters.

Something like the foregoing was the common opinion expressed by gardeners after they had tried their hand at cultivating the Golden Champion. This became more and more the case when they had given it up to try the Duke of Buccleuch, which was said to be of better constitution and free from spot; but those who failed with the one fared little better with the other, and many did not scruple to denounce them both in unmeasured terms. I could never see the force of this kind of argument, and it has often occurred to me that it would be interesting to know in how many instances out of, say, twenty failures it is the fault of the cultivator and not that of the Grape that its berries spot and split. The following extract from the pen of a well-known horticulturist appeared in a contemporary:—"The fault it has, and that one I have not been able to overcome is this—about three weeks, perhaps less, before the fruit would be ready for use some of it splits, more of it becomes spotted under the skin, and before the Grapes are ripe not a bunch is presentable. Now, I object to take the responsibility of this, as I have grown many Grapes in that house, and grow them now sufficiently good to take first prizes at the London shows." Again, in the "Gardener's Assistant," new edition, revised and extended, this same authority instructs as follows upon Vine culture:—"A proper degree of atmospheric moisture can be kept up by keeping the evaporating troughs that are cast on the hot-water pipes constantly filled with water, and by syringing the walls as well as watering the paths two or three times a day. The best time to sprinkle the borders and paths and to syringe the walls is when the ventilators are opened in the morning, and when the house is shut up in the afternoon. In very hot weather the house should be damped two or three times during the day besides."

As it is well known that the disease of spot on the berries and leaves is brought on by a stagnant atmosphere overcharged with vapour and aggravated by sudden changes of temperature, to me the marvel is how under such a system of continual steaming, syringing, and damping of paths, borders, &c., however anyone manages to get Grapes of any kind finished so perfectly as to take first prizes at London shows. One thing certain is that under the steaming, morning and midday damping process it is impossible to get Golden Champion or Duke of Buccleuch perfectly finished and free from spot. It is also certain that an atmosphere which will perfectly finish them will also be suitable for most other varieties. I venture to say that steaming troughs in vineries are not only unnecessary but positively injurious to the well-being of the Vines; the time occupied in attending to them can only be accounted as so much labour lost and water wasted. We are repeatedly told to follow Nature as far as possible, but what similarity can there be between the steaming apparatus and Nature? Were it not for this agency I am convinced we should hear much less about spotting, cracking, rust, scalding, warts upon the leaves, &c.

In my own practice I treat the Golden Champion the same as other varieties, and entirely dispense with the use of evaporating troughs upon the hot-water pipes, and after the Vines come into flower never damp or syringe the house until late in the afternoon; in hot weather not until the sun is off the leaves. But the dampings then are not half-hearted ones. If the weather be very dry and hot we again give the borders and paths a second damping at dusk, leaving a little air on all night and a little heat in the pipes. During bright weather the ventilators are farther opened between 5 and 6 A.M., and more hot water is allowed to circulate in the pipes to dry up any excess of moisture that may be in the house before the sun shines fully upon the foliage. When watering the borders care is taken to do this on dull days or in the evening. By these simple means we are enabled to have the Champion ripened perfectly clean and free from spotted and cracked berries.

Someone will say, "What about red spider?" Well, the presence of red spider is one of the natural results of neglect or mismanagement. In a well-regulated and properly managed vinery, all things being equal, no fear need be entertained about the ravages of that pest—at least such is my experience. Golden Champion is in every sense of the term a magnificent Grape, well worth bestowing upon it any extra attention necessary to grow and ripen its fruit perfectly, which is not seen at its best until five or six weeks after the berries turn yellow, then the flavour becomes very rich, and has a peculiar varied sweetness distinct from any Grape I know. It is a strong robust grower, and requires ample room and light to develop its leaves and ripen the wood. I would not recommend planting it in small, early, close vineries, nor in semi-stove greenhouse vineries. We succeed best with it in span-roofed houses, and at the present time have it growing on its own roots grafted on the Black Hamburgh and White Frontignan, but the most satisfactory returns are got from the rod grafted upon the Black Hamburgh.—J. McINDOE.

THE CULTURE OF PHALÆNOPSES.

WHY do so many of our best Orchid growers fail to grow the beautiful Moth Orchid? I am indebted to my employers for their liberality in allowing me the means at various times to visit a few of the leading collections of Orchids in this country. One thing I have particularly noticed is where Phalænopses are most numerous a house has to be devoted to them entirely, and in such a case where the plants are in pots or baskets and placed on stages with no other plants growing under them, I have never seen such satisfactory results as might be wished. On the other hand, where only a few are grown, the plants are generally hung up near the glass above stove plants, Ferns, or other Orchids, and, so far as I have seen, the results have been all that could be desired. Two years ago Mr. Smee purchased several plants of

P. antennifera, and after they were established I gave one to a gardener at Fulham (by no means the best plant), who hung it in the East Indian house, and last August, at the time of the sale there it had three pairs of good leaves. It was then returned to my care, and was placed in equally as warm and moist a house, but by Christmas the plant lost three of its lower leaves.

The finest plants of *P. Schilleriana* I have seen are at Croydon Lodge. Mr. Carr, the gardener, grows them in a large stove hanging over some fine specimens of *Eucharis amazonica*, which are liberally supplied with liquid manure all through their growing season. The largest plant has twelve full-grown leaves, and I think three growths. The largest leaf is 16 inches long, the smallest is 10 inches, producing a splendid branching spike 4 feet 7 inches long, bearing eighty-eight blooms. At a garden in Elmers End, Beckenham, I recently saw some *P. amabilis* and *P. grandiflora* in baskets with the compost as decayed as could be, but the roots were as healthy as anyone would wish to see, and the leaves leathery. These were also growing above other plants. I should be the last to recommend any person to allow the moss to remain in the baskets when decayed, but simply mention the fact in support of my argument.

I have under my care about sixty *Phalænopses*, of various species and varieties, and although I have lost but few, I have been unable until now to grow them; they have generally lost an equal number of leaves to those they make in a season. We have shifted them from one house to another, and from corner to corner, and the results have always been about the same, except one season, when they were hung in a warm vinery. I think they made somewhat better growth, but I did not guess the cause of it. Now the majority in their native homes are growing on branches of trees with foliage luxuriating around and below, and to imitate this I believe is the secret of success.

Mr. Heims, gardener to F. A. Philbrick, Esq., Q.C., Oldfield, Bickley, has set an example which deserves the attention of at least those who have hitherto failed in growing *Phalænopses*. A few days ago, when in the house lately figured in your columns, I saw 300 plants, and although I looked closely into them, I could not find more than one but what was healthy and carrying fine leaves (I have thought since that that one might be *P. Lowi*, I did not think of inquiring at the time) and the old flower stools are evidence of what they have done. They are undoubtedly the finest examples I have ever seen in any private collection, and the owner and grower may well be proud of them. The plants, as represented, are all grown in baskets suspended from a wire trellis fixed to the roof, and the borders beneath are covered in a dense mass with *Cyrtodeira fulgida*, *Fittonias*, and *Pilea muscosa* (Artillery Plant). I firmly believe this to be the only manner to grow them satisfactorily, and the nearest approach to nature. This undergrowth evidently gives off something which stimulates the plants above. Although not envious of Mr. Heim's success, the sight of his plants set me thinking, and I have now formed a border similar to his and hung our plants over it. It is yet too soon to say positively how they will succeed, but I never felt more confident of anything than that this is the right way to grow them.

Before commencing to write this I endeavoured to call to mind every place I could remember seeing *Phalænopses* growing, and in almost every instance where the plants were on bare stages, mounted over, or hanging up with no undergrowth, the plants have been a source of trouble and anxiety, but where they are growing just above other foliage, and in some instances with very little attention, they are all that could be desired.

I know some that are doing fairly well hanging over water and even over the steam of a hot-water tank, but rain water contains a certain quantity of ammonia salts. They want something besides the ordinary heat, moisture, and shade. I imagine the condition of the fine plants at Croydon Lodge is mainly due to the ammonia arising from the liquid manure used for the *Eucharis*, together with the carbonic acid gas given off by the leaves at night.—G. W. CUMMINS, *The Grange, Wallington*.

FRAME CULTURE OF MELONS.

Now that well-heated glass houses are so plentiful we are apt to think them indispensable for many purposes, including Melon culture, overlooking the fact that there are innumerable places where no such conveniences are provided, and also that as good Melons have been and can be again grown in frames as have ever been cut from house-grown plants. It is true they are, as a rule, grown to a much larger size in forcing houses, but in too many cases the gain in size and appearance does not compensate for loss in quality. Plenty of instances annually occur where frame-grown fruits have surpassed those grown in houses,

and that too in open competition. Let those, then, who are unable to devote any house room to Melons set to work and see what they can do with them in frames, and for the encouragement of the inexperienced—and among the inexperienced I would include in this case many young gardeners who have been trained in large gardens where Melons are grown in houses only—I may state having known instances where beginners have been surprisingly successful.

To attempt to grow Melons in frames without bottom heat would simply be a waste of time and space. They must have bottom heat, not merely at the commencement, but throughout the life of the plants. Even in the case of heated pits bottom heat must be provided or no reliance can be placed upon the crop. I admit that it sometimes happens that Melons have been grown literally in cold frames, but it was under skilful treatment and the season favourable. Such sorts as Monroe's Little Heath and the true old Cantaloupe, from which the former most probably originated, have been grown in cold pits and frames, and none but those with a very pronounced taste for Melons would ask for a second slice from one of the fruits thus secured. For affording a mild and fairly lasting bottom heat I prefer a mixture of leaves and stable manure, and at this late season the bulk of the material has already been once used for forcing Rhubarb, Seakale, and other somewhat similar purposes, to this being added a quantity of stable manure that has been thrown in a heap for a few days and become hot. If all fresh material be used, whether this include leaves or only either farmyard or stableyard manure, the two latter should be well prepared before being formed into a hotbed. If thrown into a heap for a week or until such times as it becomes thoroughly hot, then before it has heated dry in the centre it is turned inside out and again allowed to stand for about a week, much of the dangerous rank heat will have escaped. If, however, it is still found to be violently hot, and no leaves are available for mixing with it, another turning will be necessary. Should it heat dry at any time, it must, as it is turned, be well moistened with water, or otherwise it will be useless for heating purposes and spoilt as a manure.

At this period of the year it is not necessary to form a very deep hotbed, as the time for cold searching winds will soon be past. If much old material is used the beds may well be from 4 to 5 feet high at the back and a foot less in front, while the fresh material may be 3 to 4 feet high at the back and rather less in front. A well-drained sunny site should be selected, the bed facing south, and the material well shaken out, as the bed is rather firmly formed. It usually happens that the frames are all required for the preparation of various summer bedding plants, the production of a few early vegetables, or the raising of plants for the kitchen garden; but where it can be managed one frame should at once be given to the Melons, even if only a single-light box, the aim being to secure a good succession of fruits in preference to risking a glut. I should advise that the beds be formed about 1 foot wider all round than the frame, and when this is stood on, a layer of the shortest of the manure be distributed over the surface of the bed.

The best soil for Melons is a rather clayey loam, nothing being better than that which may be procured from immediately below the turf in a good meadow. Many employers object to their gardeners cutting turf, and it certainly does spoil land unless some pains are taken to supply good soil in its place, either sowing this with grass seed or placing on it small patches of turf. However, some latitude must be shown if the gardener is to grow Melons and other plants, while on the other hand the gardener must also be reasonable. Let the latter roll back a thin strip of turf, remove 5 or 6 inches of soil beneath, upon this place good garden soil, return the turf, and well beat down, and I venture to say he will not be again interfered with. Those who cannot dig their own soil should procure a load of loam, turfy or otherwise, and may, if necessary, increase the bulk by the addition of one part in three of garden soil. Very little if any manure should be added to the soil, and clayey loam especially is much benefited by the addition of a 6-inch potful of newly slaked lime to every bushel of soil. At the commencement only a mound, or about 2 bushels of soil, should be placed in the centre of each light and the lights put on. When the soil is thoroughly warmed, and the trial stick, which ought always to be kept plunged in the centre of the bed, denotes that the heat is not excessive, and the stick can be comfortably held in the hand, the time has arrived for planting.

While the beds are being prepared the plants ought also to be in readiness. At one time we only grew Victory of Bath and Scarlet Gem, then we next favoured Golden Queen and Read's Hybrid, but now we find these have deteriorated and have Hero of Lockinge and Blenheim Orange instead. The first-mentioned in each case is green-fleshed, and the others

scarlet-fleshed, and all have done good service in frames as well as under house culture. Supposing the seed is sown early in April the plants would be fit to put out by the middle of May, while if sown at the present time they would be ready for planting late in May or early in June, after which date it is not advisable to plant them in frames. It takes about four months from the time of sowing till the fruits are ripe, and from the earliest planted it is possible to obtain a second crop. For frame culture we always prefer raising our own plants, as those raised in houses are liable to be infested with various insect pests, and which when established on plants in frames are not easily exterminated. They say we should never look a gift horse in the mouth, but the happy recipients of Melon plants from their neighbours in larger places should form an exception to this rule. If such plants are either much root-bound or infested with red spider, thrips, or mealy bug, their best place is the rubbish heap. The early Cucumber frames, which are to be found in most private gardens, is the best place for raising Melon plants. Instead of sowing the seed thickly in pots—this usually resulting in a number of tall weakly plants, and which will be greatly checked when potted—it is a much better plan to sow the seed singly in 4-inch pots, from which size they may be planted out. Directly the seedlings are up they should be raised to near the glass and encouraged to grow sturdily. By the time they have formed a second pair of leaves they will be ready for planting, and if not planted soon they should be shifted into 6-inch pots, using good loamy previously warmed soil, and potting firmly. The plants being still kept in a light corner of the frame will thus continue growing, and when finally planted will make good progress at once.

Either one or two plants may go to each hillock of soil. In the former case about two early stoppings will be necessary in order to obtain four leading growths, and when two are planted one stopping only is necessary. This stopping may, if the plants are growing strongly, be done before they are placed out, but they should not remain in the pots after they have started afresh. I ought perhaps to add that it is advisable, if overheating is threatened, to place a layer of inverted turves under the soil, and this will moderate the heat. The plants must be planted very near to the glass and have the soil firmly rammed about the roots, this firmness resulting in the formation of sturdy fruitful growths rather than a Cucumber-like luxuriance. Two leading growths should be taken towards the back and two towards the front of the frame in each light, these being stopped when near the limit. The laterals may be thinned when this can be done with the finger and thumb, for if this judicious thinning is delayed till the frame is crowded with growths, and the knife has then to be freely used, much harm will inevitably result. Before the plants have made much progress heaps of soil should be placed in the corners of the frames to be warmed through, and this must be added to the hillocks before these are covered with growth. Later on about 6 inches of soil can be disposed over the whole bed, and in this the roots will quickly find their way.

From the first the "collars" or short main stems of the plant should be kept clear of shoots, as unless they harden properly they are very liable to canker, and this is quickly followed by a general collapse of the whole plant. With Melons it is usually necessary to set the whole crop almost simultaneously, as if one or two fruits get the lead they monopolise the whole strength of the plant. If some of the earliest formed laterals are stopped at about the fourth joint, these will produce sub-laterals, and which will be fruitful and fit to set at the same time as the fertile blossoms produced on the end laterals of the main growths. When a sufficient number of blossoms are opened, or will be opened in the course of another twenty-four hours, the frame should be ventilated early so as to dry them by 11 A.M. Bees will frequently do all the impregnating necessary, but it is not wise to leave this to insect agency, and the grower should at the time mentioned carefully rub the pollen-laden male blossoms on the stigma in the centre of the fertile blossoms or those with an embryo fruit attached. The frame should not be watered or damped on that day or the next, after which they may be treated as I have yet to recommend. Extra large fruits not being wanted, each plant or pair of plants must be allowed to perfect six or eight fruits, any beyond that number being removed before they are as large as hen's eggs. After the crop is set stop all the growths at the first or second joints beyond them, and continue to closely stop other shoots as they form, the aim being to secure a number of healthy fully developed leaves, rather than a thicket of weakly growths. The young fruits may at once be laid on pieces of slate, tiles, or glass, and later on may gradually be raised off the ground with the assistance of inverted flower pots. Unless this is done the

under sides will have a bleached uninviting appearance. Neither do the fruits net satisfactorily unless they receive a fair amount of light, though not necessarily bright sunshine.

The bottom heat throughout is best kept at about 75°, and this can be managed if occasional linings of heating material, including a moderate quantity of grass from the mowing machine, is occasionally built round the frame. Care, however, must be exercised, as if made too hot the delicate Melon roots quickly succumb, and the prospect of a good crop is lost. On the other hand, if the bed is allowed to become cold a collapse may be the consequence, especially if the weather be comparatively sunless and water is too freely given. The heating material placed in cold pits does not so quickly lose its heat, and if well prepared it may last until the crop is perfected. A top heat from 65° to 75° is suitable, air being given at the back of the frame early on bright days and in small quantities, so as to keep the temperature at about 80°, closing early enough to raise the heat to about 90°, the frames to be matted over or otherwise covered every night. Sometimes the heat of the frames unavoidably declines in dull weather, and in this case little or no damping should be done, and water must be given sparingly. When everything is going on satisfactorily water must be freely used, and always slightly above the temperature of the bed. The soil should be kept uniformly moist, and in clear weather plants in full bearing will require watering twice a week. Liquid manure is not easily given without disfiguring the foliage, but a slight sprinkling over the soil of guano, soot, or some kind of artificial manure may well be given when the crop is swelling. On all clear days the frame must be freely sprinkled with tepid water before it is closed, always avoiding wetting the collar of the plants. If any shade is given the material ought to be very thin, and applied during the hottest part of the day only. The plants being healthy, no drying off should be attempted, or at any rate not until the fruits give signs of cracking round the footstalk, when the frames should be kept drier and rather more airy. If a second crop is thought of, the heat must be raised again, more moisture given, and if much of the old bearing growth should be cut out, the young shoots being encouraged to spread will soon attain to a fruiting condition.

Red spider, green and black fly, thrips, and canker are the principal enemies to the Melon, the former to be kept down by frequent sprinklings, and, if need be, a thorough coating of flowers of sulphur, and tobacco powder or tobacco water is the best preventive of the other insect pests. On the first signs of canker the affected parts should be scraped and coated with either cement or newly slaked lime, renewing this from time to time. Neither sand nor sulphur are good remedies, as they do not absorb the viscid matter which exudes from the diseased places.—W. I.

STEM-ROOTS OF LILIUM AURATUM.

My hearty sympathy with "Scientia's" admiration for the lovely Madonna Lily (*L. candidum*), makes me wish I could endorse his remarks as to its never failing. Unfortunately I have the greatest difficulty in making this Lily succeed, in spite of trying it in all kinds of soils and situations during the past eight years; and although I grow many Lilies and get good blooms out of doors of some that are often considered shy, such as *L. Krameri*, *L. Browni*, *L. Washingtonianum*, &c., the only fine examples of *L. candidum* I have ever grown were in heavy loam under a hot south-west wall.

But in the matter of stem-roots of *Lilium auratum* and so-called "sunstroke," I have been wondering whether "Scientia" has not inverted the usual sequence of cause and effect. The remark about more *L. auratum*s failing than all other Lilies may be true, but it is much like saying that of all the roots brought into Covent Garden there are more rotten Potatoes than all the bad Turnips, Carrots, and Parsnips put together. Where thousands of one species are grown for every hundred or score of others, the actual number of bad specimens may be very great without proving that species to have a more delicate constitution. That the number of failures of *Lilium auratum* in proportion to the enormous numbers and infinite variety of conditions in which it is grown need really be considered as excessive, has yet to be demonstrated. I believe a valued contributor lately stated in these columns his conviction that before long people would buy their *L. auratum* annually like Hyacinths, than which they were hardly longer-lived, and there is no doubt that early in the season many bulbs are bought which—perhaps badly packed, or shipped before they were ripe by careless exporters, with a view of being first in the market—are flabby and soft, and seldom survive, especially if allowed to bloom the first season. But I find that by selecting sound dense bulbs my

losses, in a considerable collection of imported auratums, are not numerous.

Might it not be, however, that the failures of *Lilium auratum*, to which "Scientia" alludes, result in reality from the view on which he bases his treatment of the stem-roots, being a misconception? The great thing in the successful cultivation of a plant is to realise the exact conditions under which it grows in its native habitat, and for any structural peculiarity that a plant may have the local reason should be sought, in order that full advantage may be taken of it. In the hill country in Japan where *Lilium auratum* is chiefly found growing in the porous fertile soil characteristic of a volcanic region, I believe that during the month of May, when the Lily stems are in most active growth, it rains every day. Thus it will be seen that these Lilies are accustomed to abundance of water during the early stages of growth, although not growing in wet places, the porous soil ensuring perfect drainage. If, therefore, they are exposed to drought, such as is so commonly prevalent in our climate during the spring, the stem-roots do not get properly developed, and there follows an abnormal drain upon the resources of the bulb, which soon collapses. From this point of view, at least, there is nothing "unnatural" about stem-roots, and that evil should result from their ill-treatment seems at any rate more probable than the quaint notion of a plant being "sun-struck," especially when we consider that the summer in Japan is hotter than in England. Doubtless plants that were lacking moisture and subsisting on their bulbs would shrivel in sudden hot sunshine, but it is not therefore necessary to attribute their death to the sun, which only renders it obviously apparent, for, as "Scientia" says, "when once affected they never recover," they being by that time already dead. In fact the last paragraph of the letter is all good advice in view of the usefulness of stem-roots, since if it be advantageous to keep the plants well watered in the growing season, a mulch or undergrowth (as of *Rhododendrons*) is of great value in keeping the ground moist.

Another thing that seems to support the view of the stem-roots saving the bulbs, is that when people complain of *L. auratum* being useless after having been once flowered in pots, we frequently find that the bulbs have been grown like Hyacinths, quite on the top of the soil, so that no use could be made of stem-roots, and the bulbs have been completely exhausted. I have heard (though I never tried the experiment) that if a flower stem of *Lilium auratum* be separated from the bulb, cutting it off below the stem-roots, and planted independently with due care, to avoid injury to the stem-roots, the plant will continue to grow and flower with but little apparent check. If this be the case, to neglect such an obvious source of power to the flower-stem cannot but be regarded as wasteful in the extreme, especially when it is remembered that next year's bulb depends on the vigour of stem, the leaves of which are the means of storing it with its required constituents.

There is such an obvious hiatus in the argument when "Scientia" states his belief that without stem-roots hundreds of *L. auratum* would not bloom, and then proceeds to counsel their rigorous suppression, that I am half inclined to suspect that his object is to draw correspondence on the engrossing topic of *Lilium auratum*, and I therefore venture to recapitulate the conditions under which it is grown successfully here without troubling anyone to remove its "unnatural" (or "unscientific") stem-roots. Good sound bulbs (not flabby, and with scales loosely flapping against one another) are planted 6 inches deep, that the stem-roots may be well underground among *Rhododendrons* in light porous peaty soil on banks and slopes, where, though they are abundantly watered during May and June, they are never in stagnant moisture even during winter. This treatment results in numerous and fine flower stems, of which one last year bore sixty-five blooms, and several others over twenty.—THETA.

TURNIP-ROOTED CELERY.

WHERE much Celery is required for stewing this variety should be grown, as it produces fine large globe-shaped roots, which are extremely hardy and well flavoured. They may be grown to come into use in November, and the same batch will supply roots until this time. In a garden not far from here we saw a fine quantity of it last autumn. Since then it has been used from time to time, and the roots left are still sound and good. This long season of usefulness ought to be a good recommendation for it, and its very simple culture also commends it. If a pinch of seed is sown on any rich fine surface in the open about this time the plants will appear in a fortnight or so, and by the middle or end of June they will be ready for planting in their permanent quarters. The soil for their reception at this time should be heavily manured and deeply dug. No trenches or anything of this kind are needed, but the plants should be dibbled into the surface of the ground in rows 18 inches or so apart, and 12 inches or 15 inches from plant to plant. The Dutch hoe must be run amongst them to keep the weeds down, but no other

attention is required, as they will bulb freely in the autumn, and be found a very excellent addition to choice vegetables.—J. MUIR, *Margam*.

AMONGST THE ORCHIDS.

AN orchidist can spend a very pleasant day in the neighbourhood of Leatherhead and Dorking, for he can conveniently visit two of the most celebrated collections of Orchids in the kingdom, besides enjoying the natural beauties and refreshing air of a charming district. A day so occupied will yield many agreeable memories; and whether the visitor's object is pleasure or business, or a combination of both, the result will be equally satisfactory. The two establishments so particularly worthy of a visit are Downside and Burford Lodge, the names of which, together with those of their respective proprietors, W. Lee, Esq., and Sir Trevor Lawrence, Bart., M.P., are identified with Orchids throughout Great Britain. Both can be readily seen in one day, and the best mode of doing so if travelling from London is to alight at



Fig. 62.—*Dendrobium nobile nobilium*.

Leatherhead station, from which Downside is reached in about a quarter of an hour, and to proceed thence to Burford Lodge, returning from Box Hill station to London. If the weather be fine, and the visitor a pedestrian, he will enjoy a walk along the high road between Leatherhead and Boxhill, for the scenery is of the true Surrey character, varied and beautiful, though without any strongly marked features until Box Hill is reached. At both establishments much of interest will be found, but each possesses its special features, which will be pointed out in the following notes.

DOWNSIDE.

Many of the leading collections of Orchids are very differently situated, and when this is duly considered it becomes the more remarkable that such general success should be obtained under such different circumstances. Orchids may be seen growing within the smoke radius of large cities with scarcely less luxuriance than they do in the pure atmosphere of the open country, or, as Mr. Percival has them at Southport, fully exposed to the sea breeze. As to elevation, there is also much difference, and a good example of this is afforded by Downside and Burford Lodge; while the former enjoys a considerable elevated site upon the slope of a hill, the latter has a most sheltered position immediately at the foot of Box Hill, yet in both cases the plants are all that could be desired. There is, however, no doubt that the chief point is to have a situation for Orchid houses, at least for those devoted to tropical species, fully exposed to the sun, as any necessary shade can be always provided, and the maturing effects of the sun is soon manifest in stout hardy growths and highly coloured substantial flowers. This advantage is enjoyed to the fullest extent at Downside, for the hill upon which the houses stand slopes to

the south and west; and though probably during the summer the sun heat is at times rather fierce, yet when suitably tempered by blinds it produces surprising results, especially as regards the Cattleyas, which are so important a feature in Mr. Lee's valuable collection. It is somewhat similar at Southport, where Mr. Percival has attained so large a degree of success. Dr. Paterson's Orchids have an equally free exposure, though they have not such an elevated position, and there again the growths are vigorous, but solid, and scores of other instances could be named to prove this point if proof were needed. Beyond the matter of exposure to sun, for all but the "cool house" Orchids, position as regards elevation seems to have little effect in the cultivation of these plants.

At Downside about twelve well-built houses are devoted to Orchids, and some of the structures, especially that containing Cattleyas, being exceptionally handsome and spacious. Others, too, are in progress, and will enable Mr. Lee to still farther extend his already wonderful collection. A large number of genera and species are represented, but particular attention has been given to obtaining the best varieties of certain genera, and on the attainment of this object no efforts or expense have been spared. Thus of *Lycastes*, *Dendrobiums*, *Cattleyas*, *Odontoglossums*, and *Masdevallias* numerous beautiful forms have been secured, some of which cannot be seen elsewhere, and in many cases they are worth more in guineas than the typical species would realise in pounds. *Lycaste Skinneri* and its varieties occupy the greater part of a span-roof house, and amongst them are some exceedingly beautiful forms, which early in April were flowering freely, varying from the darkest rose or crimson to the pure white and valuable alba. One distinct and favourite group of varieties is distinguished by a white lip contrasted with richly coloured sepals and petals, ranging, however, from the darkest rose to pale pink or the faintest blush, as in the variety appropriately named *delicatissima*. It would be quite unnecessary to give names to every variety, for they have become so numerous that it would be confusing, and every batch of imported plants would add many to them each as worthy of distinctive titles as those previously honoured; this has consequently been discontinued in the majority of collections. There can, however, be no question about the usefulness of these *Lycastes*. Their flowers are of such substance that they last for a surprising time either in the ordinary house or in a room; moreover, they are of easy culture. But perhaps some err in giving them too cool treatment whilst growing, and this mistake Mr. Woolford avoids by giving them a temperature 5° to 10° warmer than the *Odontoglossum* house, and as the house is nearly devoted to them, as already remarked, this can be readily done. That the treatment suits the plants cannot be doubted, for they are all healthy and strong; the flowers have been numerous, and their size much above the average. Associated with the *Lycastes* are the following, all of which seem to thrive under the same treatment. The charming little *Odontoglossum Oerstedtii*, and its much superior variety *majus*; *Cymbidium Lowianum* and *sinense atropurpureum*; several *Zygopetalums*; *Oncidium ornithorhynchum*, and its companion *O. cheiroporum*; *Trichosma suavis*; *Pilumnas*, the distinct purple-flowered *Odontoglossum Edwardi*, *O. Krameri*, *Cypripedium Schlimii* album, and *Dendrobium Falconeri*, which is grown there all the year round with most satisfactory results both in growth and flowers.

DENDROBIUM HOUSE.

The *Dendrobiums* are great favourites with many orchidists, and they evidently rank high in Mr. Lee's opinion, for a better collection could not be seen, and very rarely is such a handsome display provided as that which has rendered the Dendrobe house at Downside so gay for a long time past. These plants when well grown are remarkably handsome, with their long pseudo-bulbs, wreaths of flowers; and though they cannot equal the Cattleyas in gorgeousness they possess a beauty that few other genera of Orchids surpass. Even the old and well-known *Dendrobium nobile* possesses charms of no mean order, and such a specimen as that recently shown at Kensington by Mr. Prinsep would be amply sufficient to prove its claims to the general attention of plant lovers. This species is also well grown at Downside, and is represented by a number of the best varieties obtainable, several being extremely distinct. One named *D. nobile album* has a pure white lip without any blotch; *D. n. elegans* has a large pointed lip tipped with purple; *D. n. grandiflorum* has wonderfully large flowers of a rich purple colour; and several others are notable for their dark-coloured flowers. Far away superior, however, even to the best of these, is the charming *D. nobile nobilium*, the sight of which has sent many an Orchid lover into ecstasies, and it is not surprising that it has become so great a favourite. Two good plants are grown at Downside, one having four pseudo-bulbs and the other two, the latter bearing eight and five flowers respectively, large, beautifully formed, and of the richest purple or violet-tinged crimson, extending from the tip to the base of the sepals, the lip having an intensely rich blotch, and owing to the position of the flower the lip is directed forward so that the blotch is very prominently noticeable. In the woodcut (fig. 62), the character of the flower is fairly shown,

but wood engraving cannot do full justice to such a grandly coloured variety. *D. Wardianum* is remarkably well grown, and numerous plants have been producing a grand effect, many of the stout pseudo-bulbs bearing two or three dozen flowers measuring 4 inches in diameter, and richly coloured, but varying in depth of tint to the white album. *D. Ainsworthii*, and its near relatives *D. splendidissimum* and *D. Leechianum* are deserving favourites. *D. thyrsiflorum*, the remarkably fringed *D. Harveyanum*, and the peculiar little *D. Kingianum*, are also a few amongst other species similarly well treated.

Phalænopses are numerous, all the best of the species and varieties being included in the collection, while with them at the time of my visit were about two dozen strong young plants of the lovely *Angræcum citratum*, flowering most freely. In an adjoining East Indian house *Dendrochilum glumaceum*, *Cattleya amethystoglossa*, *Brassavola glauca*, and several species of *Epidendrum* were the leading features. Several other houses of more or less interest, and all containing well-grown plants, are passed through until we reach the handsome

CATTLEYA HOUSE.

This is probably the finest house of the kind in any amateur's garden, and is second only in size to the Veitchian Cattleya house at Chelsea. It is 100 feet in length and 21 feet wide, with a centre and two side stages, which are filled with vigorous specimens, many of considerable size, and including some grand and valuable varieties. The flowering plants were arranged chiefly along one side of the house and in the centre, over 600 flowers being expanded, principally of *C. Trianae*. The effect produced by such a mass of flowers under

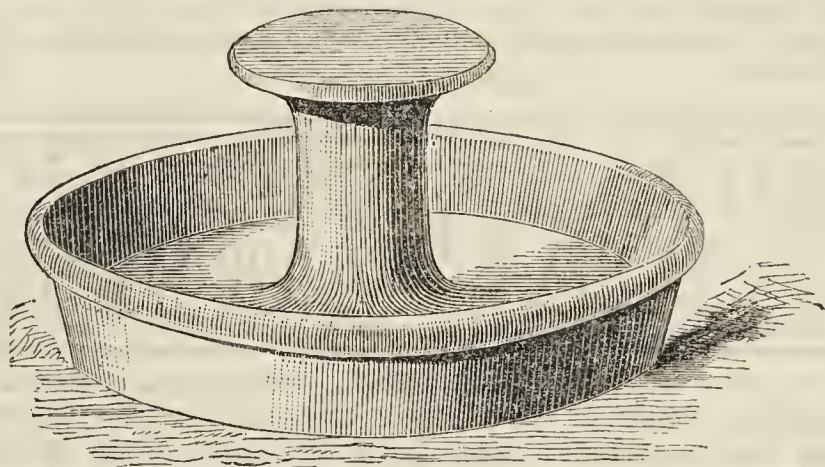


Fig. 63.—Mr. Woolford's Orchid Pan.

a bright sun is indescribable, the colours ranging from the intensest crimson of the magnificent *C. Trianae Leeana*, which has flowers 8 inches in diameter, to the delicate rosea section and the white alba. The intermediate shades are innumerable, but together they served to produce an exhibition of surprising beauty. Many other species are grown in proportionate numbers, and all the later-flowering forms were showing sheaths abundantly. One little appliance employed in this house deserves special notice—namely, a combination saucer and pot support, of which an illustration is given in fig. 63. This has been in use at Downside for a long time, and has been found very serviceable besides being neat and inexpensive. It was prepared from a design by Mr. Woolford, and, as can be seen, effectually prevents slugs attacking the plants so long as the saucer is filled with water. It also ensures a constant humidity beneath the foliage, and is far more satisfactory than the inverted pot usually employed in a similar way.

Some farther notes respecting this establishment must be deferred, but it may be added that no lover of Orchids should lose an opportunity of visiting Mr. Lee's famous collection during this and the following months.—L. CASTLE.

PATRIARCHAL YEWS.

PASSING by the old churchyard of Mallwyd in Montgomeryshire, just on the borders of Merionethshire, I was forcibly struck by the appearance of four magnificent Yews, one much larger than the rest. It is said they were all planted at the same time, but as no very authentic information could be gathered on the spot this must not be considered as a matter of fact. Certain is it that the smallest specimen appeared to be a distinct form from the rest, the leaves of a light green, branchlets denser, and in my opinion it would develop much slower than the rest. Standing by the largest patriarch one may be excused for expressions of enthusiastic wonder; questions crowd upon the mind as to its age, by whom planted, whether before or after the sacred edifice was constructed. To me as a gardener, the names of Anderson and Weir were familiar; both former gardeners to Sir E. Buckley, The Plas, Dinas Mawddwy. I learnt concerning Mr. Weir that he never went to church without visiting this Yew. However, we may measure the original bole of this noble Yew very near the ground, as the branches originate from near the base, and find it has a circum-

ference of about 28 feet. There are nine primary branches, the largest of which has a circumference of 14 feet at 5 feet from the ground. Several large branches have been broken off and removed, otherwise it is likely a much larger diameter of head could be recorded, but as near as one could ascertain from one extremity of the branches to the other is not less than 63 feet. The trunk of the next specimen is more perfect, and is undivided up to a height of 8 feet from the ground. I measured its circumference at 5 feet from the ground, and it was not less than 19 feet of solid trunk. The bole of No. 3 was also pretty perfect, with a circumference of 13 feet. The fourth, as previously mentioned, is much smaller than and distinct from the rest. Long may these patriarchs remain in their present position in such harmony with the huge piles of metamorphic rocks surrounding them.—J. T. R.

DUKE OF BUCCLEUCH GRAPE.

IN reply to "A Duke Grower," let me say that while it was not my intention to recommend the Duke as an early forcing Grape, I admit that what I set forth in the circular can be construed to mean that. Had I clearly stated that it was an excellent early forcing Grape—that is to say, a Grape that would force in the same house as the Black Hamburgh, and ripen on the 1st of May, and ready for table before its black companion, I would only have been stating what I knew to be truth.

I suppose your correspondent must have observed that a wound made on a Vine just as it starts into growth bleeds, and he must also have made note that a wound made on the same Vine when in full bloom does not bleed; yet he writes, "One would naturally expect the extra sap to run out at the hole made by the gimlet for its escape, but no one ever saw anything of the kind happen." To enter into a controversy on such a question with one who expects to see sap flowing from a gimlet wound made in a Vine in full growth would be beating the air. I, and no doubt many others, will be much interested if your contributor, "A Thinker," will explain to us how he proves it to be a settled fact "that moisture passes from the atmosphere into the fruit and causes splitting."—WM. THOMSON.



"A. W." sends the following note on FRIGHTENING BIRDS:—"A remarkable instance of the efficacy of a beaver hat to scare birds from Peas was discovered the other day in the garden at The Beeches, Guildford. So 'frightened' were the birds that a nest containing three eggs was found in an old hat used to keep them away."

— MR. G. BATES of Calcott Gardens, near Reading, has sent us a very simple, but very efficient, contrivance for DISTRIBUTING WATER FROM WATERING POTS. Its effect is the same as that which is produced by a kind of the French watering pot, where the water is spread out like a sheet instead of passing as a shower through a perforated rose. In the French pots the spreader is fixed, but in this case it is moveable like a rose, and we consider it a very useful appliance.

— WE are informed by a correspondent that the eighteen Hyacinths to which the Lord Lieutenant's cup was awarded at the last show of the ROYAL HORTICULTURAL SOCIETY OF IRELAND were probably the finest that have ever been exhibited there. The cup was taken by Mr. Shapland M. Landy of Clarendon Park House, Kingstown, and it is interesting to notice that he is again taking the high place as an exhibitor which he used to hold, until circumstances led him for some years to discontinue exhibiting. As a grower and exhibitor of Auriculas, Hyacinths, and Gladioli he at one time held the very foremost place, and it is hoped that this great success is but the augury of future triumphs.

— ECLIPSE STRAWBERRY FOR FORCING. — Mr. Pithers sends us ripe fruit of this variety from Summerhill Gardens, County Meath, the variety, he says, succeeds better than any other, bearing from eight to ten fruits on a plant. They are very fine indeed. Our correspondent observes, "We are nearly washed away with rain." All over the south of England pastures and crops generally have been suffering by the want of it, but on Tuesday night we had a welcome shower.

— WE are desired to announce that the CRAY VALLEY AND SIDCUP HORTICULTURAL SOCIETY will hold their exhibition on July 11th, 1885; and West Grinstead Horticultural Society on August 26th, 1885.

— "J. C." sends some flowers of ANEMONE CHRYSANTHEMUM ASTARTE, very fresh, bright, and beautiful, and states that he has been

cutting from the variety every week since January. The plants did not flower until placed in a temperature of 50° to 60° at night, but since then it has been very satisfactory. For late flowering such a variety is extremely useful, but have other growers found it similarly late?

— THE CINERARIA has found a most congenial home at Farnham Royal, near Slough, where Mr. James now has a fine collection numbering some thousands, growing and flowering in great luxuriance, promising a fine seed harvest. Every plant is a picture of health, large dark green foliage completely hiding the pots, and surmounted by grand heads of blooms. The individual flowers of some reach the extraordinary size of 4 inches in diameter, and the colours throughout are extremely varied and rich, especially the dark selfs, of fine substance and perfect shape. Mr. James has been honoured with both the gold and silver medals of the Royal Horticultural Society for his collections of Cinerarias. In a few weeks the Calceolarias, for which he is also famous, will present a still more brilliant mass of colour.

— "A. W., Guildford," observes:—"In walking through the fine old gardens of historical Loseley Park, near Guildford, the other day, Mr. Begg, the gardener, called my attention to half a dozen plants of a very fine dwarf and compact variety of MYOSOTIS SYLVATICA. The flowers are of a darker blue, are larger and finer than those of *M. sylvatica*; it is only 3 inches high, and resembles very much the character of *Lobelia* Emperor William for compactness and free flowering. I believe it will become one of the finest varieties for spring bedding."

— THE INTERNATIONAL INVENTIONS EXHIBITION RAILWAY GUIDE AND ROUTE BOOK, compiled and edited by Mr. J. R. Somers Vine, is now being issued by Messrs. W. Clowes & Sons, who are the authorised publishers of the guide books in reference to the Exhibition, which will shortly be opened at South Kensington. The "Railway Guide" gives a general outline of the programme of attractions for the season, a plan of the Exhibition, a railway map extending to about thirty miles round London, with full particulars as to fares, including admission to the building, indicating the stations where passengers have to change trains and the times of the last trains at night. A great variety of useful information to intending visitors is given, and the fares are in the majority of cases surprisingly low.

— THE CRYSTAL PALACE PROGRAMME OF ARRANGEMENTS FOR 1885 is just to hand, and in addition to the Horticultural Exhibitions which we have previously noticed, it gives particulars of the Handel Festival, miscellaneous concerts, dramatic entertainments, and innumerable other attractions of a most diversified nature.

— MR. BARDNEY has recently directed attention to the great importance of PRESERVING HOT WATER PIPES in mains. His remarks were timely. It is to be feared that sufficient care is not always taken in preventing the corrosion of pipes underground. An instance of this came under our notice the other day. In an excellent garden, managed by one of the best gardeners in the kingdom, there has been a complete breakdown in the heating. The main pipes were crowded into trenches so small and narrow that the lime used in the brickwork was in immediate contact with the pipes. To use an expressive phrase, it simply "ate them up" until nothing was left in some places, and mere wafer-like shells in others. Leakage occurred, and the pipes when touched fell in pieces, and yet they have only been in some sixteen or seventeen years, not arranged under the superintendence of a competent gardener, but a "clerk of the works." The new mains have been arranged in tunnels large enough for a man to traverse and paint the pipes, and in this way they may be kept sound for generations.

— MESSRS. HOOPER & Co. of Covent Garden inform us that they have succeeded in importing from the Riviera very fine specimens of PHOENIX SYLVESTRIS about 8 feet high in tubs, as fresh and green as the day they left. They will be pleased to show the plants to anyone who may call and inspect them.

— HYACINTHS appear to have been unusually good this year, and MR. MCINTOSH'S BULB BEDS AT DUNEEVAN were a few days ago magnificent. The Hyacinth spikes—there are some thousands of them—are, in not a few instances, equal to those that win prizes at exhibitions, and the Tulip beds are gorgeous. These are the varieties, and it would not be easy to find more effective beds:—La Belle Alliance, surpassing Vermilion Brilliant; Chrysolora, the best yellow; Rosamunde, feathered rose; Molière, much deeper, with orange base; and Wouverman, the darkest of all—purplish plum colour. The fruit trees in the garden are

massive pyramids of flowers, and the Vines and Lilliums are in the most promising state. It is a matter of deep regret that the illness of Mr. McIntosh precludes his enjoying his garden personally, but he derives pleasure by its affording delight to others, and it is certainly a credit to his able and trusted gardener, Mr. Taylor.

— AT the NEWCASTLE-ON-TYNE SHOW, recently reported in this Journal, Mr. W. L. Thompson was credited with the chief prizes for twelve Alpine and a pair of self Auriculas; in both cases Mr. W. J. Watson, Fenham, was the winner.

— MR. A. PETTIGREW, Castle Gardens, Cardiff, referring to THE LATE MR. HONEYMAN'S ALPINE AURICULAS, remarks—"I was reminded by reading the leading article in last week's Journal that it is now some two years since I received a packet of seeds of the late Mr. Honeyman's Alpine Auriculas from Mr. Wright of the *Journal of Horticulture*, who kindly undertook to distribute them on his behalf. As no report of them has appeared in the Journal, or in any other periodical that I am aware of, from the numerous recipients of the seed, I wish to say that with me they have turned out well and given the greatest satisfaction. The seeds I had were sown in the beginning of March, 1884, and almost every one germinated. When the plants were large enough they were potted into large 60's, in a compost of good loam, leaf mould, and cow dung, and grown on in a cool frame during the summer. By the autumn they had made sturdy little plants which stood the winter in fine condition, and now (April 27th) the most of them are in flower. The flowering stems are strong, and of sufficient length to carry their heads of bloom clear above the foliage. The colours of the pips are varied, rich, and delicate, and cannot fail to give satisfaction to those who are in possession of this fine strain."

— MESSRS. JAMES DICKSON & SONS, 108, Eastgate Street, Chester, send us flowers of NARCISSUS INCOMPARABILIS SIR WATKIN, the magnificent variety which was certificated as James Dickson, and which has attracted so much attention from the lovers of Daffodils. The flower is very bold, the sepals and petals pale yellow, the tube being considerably larger than most varieties of the incomparabilis type, and more like the pseudo-Narcissus, or Trumpet Daffodil. It is unquestionably a beautiful form, and the fragrance is very powerful.

— AS an example of the RENOVATION OF CAMELLIAS a collection of plants in the well-managed gardens of Mrs. Firth at Oakbrook, Sheffield, is remarkable. They are planted in a mound in which large stones are embedded in the centre of a house, and beneath the mounds is a chamber for the boiler—not a good arrangement for Camellias, and when we saw the plants two years ago they appeared "more dead than alive." A gardener less persevering than Mr. Woodcock would have despaired of restoring them; but with top-dressings of fresh soil, sprinklings of Beeson's manure, and above all unstinted applications of water, the plants have not only been saved, but are remarkable for their dark foliage, free growth, and fine flowers. Their condition exactly indicates what Camellias like—namely, thorough drainage with any reasonable quantity of water; and it is tolerably certain that both drainage and water are very unreasonably restricted by so-called "cultivators;" hence the unsatisfactory state of so many of these, the most handsome of exotic evergreen flowering shrubs.

— IN the Carnation house in the Chelsea Nursery of Messrs. James Veitch & Sons, in which some hundreds of plants are flowering, the yellow variety PRIDE OF PENSURST arrests the attention of visitors. It is a soft spotless yellow, smooth, full, and very attractive. The deep rose-coloured La Favori is large and fragrant; and deeper still, sturdy and floriferous, is Turner's Mrs. Llewelyn. These, among others, appear to be well worth growing and are adapted for small houses; but they must be light, the richest of all Carnations, Mrs. Keen, requiring a larger structure, as the plant attains considerable dimensions, being the reverse of compact in habit.

— OF the finest spring-flowering wall shrubs that have this year attracted our attention none surpasses the AZARA GILLIESII, at present in flower on a west wall at Kew. It is an evergreen, standing our winters well, especially in the south, but unless in very favoured localities the young flower buds are liable to be damaged by the early spring frosts, as they are often in an advanced stage soon after the beginning of March. The leaves resemble some of the varieties of Holly. They are glossy green, with a leathery texture, and having serrated margins. The flowers have no corolla, which, however, is amply compensated for by the bunches of brilliant golden orange stamens. The specimen at Kew is from 10 to

12 feet high, and has withstood the last four winters without the slightest protection. It makes an excellent permanent covering for a wall. It is a native of Chili, introduced some time ago, though hitherto chiefly confined to a greenhouse or for conservatory decoration.

— "M." writes: "The value of the summer-flowering Stork's Bill is well known, more especially where a collection of hardy flowers form one of the features of the garden. ERODIUM PELARGONIIFLORUM, though no less valuable for winter than the others are for summer flowering, is comparatively little known, if we may judge from the rareness with which it is met with even in the best places. It is found growing in caves and on shady rocks in Anatolia at elevations of 3000 feet, and though able to withstand mild winters in the open air in this country it is better kept in the greenhouse, where its curiously blotched blooms lend a variety to what would often otherwise be a sameness in colour. It is an extremely free flowerer, and may be had in flower almost the whole year through with a succession of plants. When the old plants become straggly with continued growing it may be cut back to within 2 or 3 inches of the pot, when it will break afresh, and soon become laden with its pretty Pelargonium-like blossoms. It generally grows from 1 to 2 feet high, forming sturdy growths if kept near the glass, otherwise they are weak and straggling. The flowers in bunches, six or eight together, are as large as a florin, the two upper petals beautifully marked with light and dark purple on a clear white ground, the under three pure white, sometimes rosy tinted, the leaves Pelargonium-like, soft light green."

— MR. C. HERRIN, Chalfont Park Gardens, sends the following:—"Allow me to call attention to the GOLDEN SPERGULA as a hardy yellow dwarf bedding plant which deserves extended cultivation. I think if its good qualities were better known few gardeners having to provide plants for carpet bedding would be without it, forming as it does an excellent substitute for Golden Pyrethrum. In fact, the colour is better, and the amount of labour required to keep it in order trifling compared with the Pyrethrum, which needs endless pinching to be kept within bounds. By working up a supply of this hardy Spergula I have been enabled to almost entirely discard the Golden Pyrethrum; consequently the saving of labour throughout the summer has been considerable. In the autumn it is pulled in pieces and replanted, what is not retained for the flower-beds being planted on a south border in the kitchen garden. It forms an excellent companion to the dark green Herniaria glabra, being similarly hardy, and increases freely in light and rather sandy soil."

PRIMROSES AND POLYANTHUSES.

ENCLOSED you will find (I hope in good condition) a small collection of my Primroses and Polyanthus. Some I have named and others are unnamed as yet, but all are seedlings raised here during the past five or six years. Visitors tell me that they have never seen such a sight as our beds of these lovely flowers this season. We have, owing to the open season, had them more or less in bloom ever since last November; but for six weeks the garden has been ablaze with them. The Violets now are nearly over, but Belle de Chatenay, of which I send you a bunch, is still holding on. How is it that many speak so slightly of this magnificent Violet? Here we gather black basketfuls of blooms from it, and of a kind that perhaps you, Mr. Editor, will describe to your readers. I would suggest testing the size of the blooms with a half-crown. I hope shortly, if permitted, to send you a short article on Primroses, but at present time is wanting.—R. W. BEACHEY.

[The flowers being packed in a tin box, arrived in excellent condition as fresh as if just gathered. In colours, form, and size they were all that could be desired.]

CATTLEYAS.

CATTLEYAS are not very largely represented in private gardens, but I believe that C. Trianae, C. Mossiae, and C. Mendelii will be grown in good numbers for cutting and general decoration. They represent a great number of shades of colour, and possess the largest and most gorgeous flowers of any genus of Orchids; and the vast quantities in which they have been imported of late years has been the means of bringing them within the reach of all.

The flowers will last in perfection for at least a month if the plants are arranged in a slightly cooler and drier atmosphere than that in which they are grown. They can with safety be removed to the conservatory or any structure kept gay with flowering plants while in bloom, provided cold draughts are not allowed to strike upon the plants, and the temperature of the structure in which they are placed ranges at night about 50°. Care must be taken that the material about their roots is not wet when removed to such structures, or the plants are liable to injury. They should be allowed to get moderately dry, and then be kept in that condition until they are returned. These plants can be used in rooms for a time when in flower, provided gas is not employed and the windows are not

opened too near them. It is not wise to keep them too long subject to the confinement of rooms, but a week or ten days will do them no harm.

The flowers last well in a cut state, and it would be impossible to imagine anything more lovely in a small glass or vase than a spike of *Cattleya* flowers with a little *Adiantum cuneatum* arranged just below them. It is a mistake to arrange or even crowd these lovely flowers amongst a variety of other blooms. The species referred to above are very useful, as they flower with great freedom in succession for several months—in fact, from winter until midsummer.

An idea appears to be prevalent that *Cattleyas* are rather difficult to manage successfully, and such undoubtedly is the case with a few species; but with ordinary care and attention the majority are as easily managed as any *Orchids*. In commencing the culture of these plants some have found it an advantage to buy imported plants, as there is a chance of obtaining some good forms.

The best time during the year to obtain imported plants is the winter and early spring months during the season of inactivity. I have, however, received plants at different times, and with care they have started freely into growth. I do not care, however, to receive them during late summer or early autumn, for the growth they make has very little chance of becoming thoroughly ripe or even completed before winter, in which state they are very liable to go off if the greatest care is not exercised. The starting and growth the first season very much depends upon the condition of the plants when they arrive. If very much shrivelled and the foliage gone the first growth will be weak, and the plants in consequence are a long time before they are sufficiently strong to flower. When the plants are plump and fresh, with a quantity of good foliage upon them, they start freely into growth, and often produce pseudo-bulbs the first season strong enough for flowering. I shall, however, treat upon plants that arrive in an intermediate state as regards freshness.

When they come to hand all bruised and decayed portions should be removed, and the dust and dirt, which is generally plentiful upon the plants, should be washed off with a sponge and a little tepid water. After this the plants may be suspended for two or three weeks, head downwards, in any structure where the night temperature ranges from 50° to 55°, where they can be shaded from the sun, and not subjected to too moist an atmosphere. Too much heat and too much moisture must not be given them in their early stages, but if obtained during the season advised they may after the time indicated be given a night temperature of 60°, and be lightly syringed once daily until they show signs of moving, when they may be taken down and placed in pots, baskets, or upon blocks of wood. The pots should be nearly filled with drainage, and a short stout stake made secure in the centre of each pot, to which the plants can be fastened. Generally there are a few old roots, and these are useful for assisting to hold them securely in their proper position. The plants should be slightly elevated and filled in with crocks until they commence to grow and form roots. It is not wise to use any potting material until they reach this stage, when a good number of the crocks on the surface can be picked out and peat fibre supplied. The only attention needed until they reach this stage is a moist atmosphere and shade from the sun; syringe once or twice daily according to the weather. After the plants commence growth the syringe must be used very lightly, and then only during the early part of the day, so that any water that lodges in the young growth will have ample time to evaporate before night. Keep the material upon which they stand moist by frequently syringing amongst the pots, and no harm will be done if tepid water is occasionally poured into the pots. These should be as small as possible consistent with the size of the plants. Baskets should be a little larger in proportion. The plants should be slightly elevated and filled up with crocks the same as those started in pots, and subject them to the same treatment.

If blocks are used they must be of moderate size in proportion to the plants. I am no advocate for small thin portions of deal for this purpose, but select some kind that is durable and will last for some years. The blocks ought to be of moderate thickness, so that when once thoroughly moistened they will retain it for some length of time. Secure the plants on the surface by means of a few copper nails and fine copper wire, so that the blocks can be hung horizontally. No peat fibre or even sphagnum moss will be needed on the blocks if those used are of moderate size. These will require greater attention in watering than those either in pots or baskets, and the blocks will need dipping occasionally, even before roots are formed, so as to retain moisture about the plants. Although extra attention is needed in dipping both plants in baskets and those grown upon blocks they do wonderfully well and flower abundantly, which is due in a very large measure undoubtedly to the abundance of light they receive when suspended almost close to the glass.

When imported plants commence growing and rooting the treatment and conditions that suit established plants will suit them. Heat and moisture should be given freely during the season of activity. Pseudo-bulbs that are made in a close moist atmosphere are generally soft, the flowers being small and poorly coloured in comparison with those produced from firm sturdy pseudo-bulbs. Rapid growth is not so much desired. The object should be to supply the plants with conditions that will insure solidity. After the pseudo-bulbs are once formed as much air as possible should be admitted, preventing at all times cold draughts striking upon the plants.

Permanent shading must never be used, as, though protection from direct sunshine is needed during the season of growth, the material employed must be light, so that every ray of light possible can reach the plants. As the growths approach full development gradually admit more light until they will bear with safety a fair per-centage of sunshine

towards autumn. The plants can be sufficiently ripened to flower well, and the foliage retained of a fine healthy dark green colour.

Cattleyas require less water perhaps than many *Orchids*, taking the whole year round. More plants are brought into an unhealthy condition through too much water than probably from any other cause. During the season of growth—that is, from the time the roots commence activity until the growth is completed, the material in which they are growing should never be allowed to become really dry. As long as the rooting material contains a little moisture the plants are safe, and they had much better be in this condition than constantly wet. A good soaking should be given when water is required, and then the plants allowed to remain until nearly the whole of the moisture has been evaporated, when another may be given. Do not water the plants over the foliage, and no more must be poured upon their creeping stems than is possible. During the winter very little water is needed; in fact, only sufficient to prevent the foliage and pseudo-bulbs shrivelling. Very little syringing is needed, not even during the season of growth, and what is given to the plants should be in the form of spray early in the day during fine weather only until the growths are formed. The water is very apt to lodge in the young growths, and if care is not taken they are liable to damp; but this will not be the case when syringing is done early and air admitted, so that the whole of the water will evaporate before the house is again closed. When the growths are formed syringe lightly twice daily until they are matured. Do not syringe during the resting season, which requires to be much longer than is really necessary for many *Orchids*, the atmosphere of the house during this period being always kept moderately dry. One of the secrets of success in the culture of these plants is a lengthened period of rest.

There is some difference of opinion about the most suitable time for potting *Cattleyas*, but I have found that they do equally well whether potted as they start into growth or before. The latter I consider preferable, then there is no fear of injuring the roots, which are easily broken. Imported plants potted as described will need repotting after the first or second season. In many instances if placed in small pots, with a limited amount of material, they are ready for shifting after the first season. The pots or pans must be sufficiently large to accommodate the plants for at least two years. Make no attempt to turn *Cattleyas* out of their pots, or a good per-centage of the roots will be destroyed, for they cling closely to the sides of the pots. Break the pots, and the portions to which the roots cling being carefully preserved and placed in the fresh pots. Remove the old compost carefully from amongst the roots. When the roots cling to portions of the old pot it is often impossible to fill with drainage to the desired height. The crocks can, however, be carefully arranged amongst these roots until the pot is more than half full of them. Over these place a thin layer of sphagnum moss, and carefully fill the remaining space amongst the roots with peat fibre. All the soil particles should be knocked out from amongst the fibre, and when this is done the material will last three years in good condition. A few lumps of charcoal may with advantage be used amongst the fibre, but do not place any moss with it, as it decomposes quickly, and then only assists in the destruction of the fibre. Elevate the plants well above the rim of the pots, and then press the fibre as firmly as possible. On and near the surface patches of living sphagnum moss may with advantage be used, as it can be removed annually just as the plants are starting into growth and fresh supplied. It is needless perhaps to say that the stems from which the roots are emitted must not be buried below the surface.

When plants growing in baskets require larger ones remove the old material carefully, and as much of the old basket as possible to which no roots are clinging. The remainder should be placed inside the new and larger basket, and the space between the two filled with crocks and charcoal in lumps within 1 or 2 inches of the top, according to the size of the basket. Fill the remaining space with the compost advised for those in pots, with a little moss on the surface, leaving the plant well elevated when finished.

Cattleyas are subject to insect pests like the majority of plants, but those that prove the most troublesome are white scale and yellow thrips. These must not be allowed to become established upon the plants, or they will soon seriously injure them. The former is best destroyed by sponging the plants with tepid water in which a little softsoap has been stirred. The latter can be killed by fumigating with tobacco smoke, sponging the plants with tobacco water, and dusting them with tobacco powder where it is impossible to get the sponge.

The temperatures most suitable for these plants from October until the end of March is 60° by night, with a rise by day of 5° or 10°. As the days lengthen and growth commences gradually raise the temperature by night to 65°, and by day from 70° to 85°. During cold or severe weather the heat by night may be allowed to fall 5° lower, or be 5° higher on very mild occasions without proving injurious to the plants. If this system of regulating the temperature is followed the plants will thrive better than if a hard-and-fast rule is strictly adhered to.—WM. BARDNEY.

MESSRS. POPE & SONS' NURSERIES, KING'S NORTON, NEAR BIRMINGHAM.

I LIVE in the Black Country and I am an old florist as well as horticulturist, and with the long spell of wet, cold, and dreary weather we have had in these parts I felt a desire to see brighter surroundings and some flowers. I knew that by running to King's Norton I should get both, and an additional treat in seeing my good old friend, Mr. Henry Pope. Few, however, call him Henry. Everybody this way who has any pretensions to be regarded as a florist know Harry Pope, and a more genial old florist is not to be found in the district. Within a few years of "threescore and ten," Mr.

Pope would take "the shine" out of a great many young men in a day's work, enjoys capital health, and is vigorous and hearty, and thoroughly enjoys a good chat about old florists, old plants and flowers, and olden times. The nurseries here are extensive, and a great lot of glass is utilised for the supply of their business in Birmingham. Mr. Henry Pope founded these nurseries, and having made himself right free from monetary cares and anxieties, he, a few years since, handed his business over to his two sons, and amuses himself by a little potting or other work as he thinks proper, and this is pretty often.

Quite half a century since the Handsworth Nurseries, then known as Pope's Nurseries, were amongst the famous of the country, and were established by an uncle and cousins of Mr. Henry Pope. Another large nursery was established at Smethwick, near Birmingham, by Mr. Luke Pope, father of Mr. Henry Pope, and lovers of good painting will look with pleasure upon this splendid portrait of a fine old nurseryman and florist with a plant of *Correa speciosa* in his hand.

The Popes have for quite a century played an important part in the gardening world, and the sons are worthily following the footsteps of their elders. Well, what I wanted to come to is this. I went out there to look at the Auriculas and Polyanthuses, and I found the latter in full bloom, but many of the former were not yet open, still some gems were in flower—John Waterson, very fine indeed; Read's Acme, Frank Simonite, all splendid; Hepworth's True Briton, a very old sort in fine character; Colonel Champneys, George Lightbody, and others opening; Conservative, the plant not a strong one, but the bloom showed its good qualities; Old Summerscale's Catherina, in good form, and this is another very old flower. I knew Old Summerscales, who lived in Halifax in Yorkshire for a long number of years, and died there many years since. Wilbraham's Lady Jane Grey, another old flower, is well done here, and has some good points, the tube being of a bright yellow colour, but awfully weak in its stamens. The Messrs. Pope have two or three most promising grey-edged flowers, seedlings of their own, from careful hybridisation, of which, I think, more may be heard anon. Sells are also cultivated; Ellen Lancaster very fine. They have a goodly collection of Alpines also, all good varieties being added as they are introduced. Amongst Polyanthuses Buck's George IV. stands pre-eminent; Crawshaw's Exile, Lancer, and Lancashire Hero were also good. What a treat it was to see about 150 pots of the double Ruby Crimson Primrose in full flower in one of the frames! It was something to be remembered. Pansies do well at King's Norton, and they are grown extensively and well.—W. D. W.

TRENCHING LAND FOR BROCCOLI.

LET me see if I can put myself in order on the question of trenching. I notice your small paragraph from two late foremen of a predecessor, which I can vouch for. I know that Burghley Gardens have been trenched both by myself and predecessors, but, as I have before said, I trench none now, nor have I for years, and still the gardens are most prolific. I shall continue the usual system, taking special note of any unproductiveness, which I hope may not occur. If it does I shall again resort to trenching, but not before. No doubt I have told "Thinker" that my secret of success is to trench the land; but I have done no trenching for years, and have always been rewarded with success.

I may here relate a small incident. On taking charge of these gardens (seventeen years ago in July) I found a large break of Strawberries which had been planted, so I was told, eight years. I decided to plant this break with Broccoli, and had the Strawberries cleared off, hoed and raked the land, and planted it without any digging, on the crowbar system. I have seen numbers of acres planted in Kent in like manner, the exact district being Lessness Heath. After all being planted, our old wall man, the late David Sells, who for fifty years nailed the trees here, and was allowed more latitude than anyone else, said to me in these words, "Ah, Master, you will have no Broccoli next spring; excuse me, sir, but Mr. McIntosh used always to trench land for Broccoli." "I said in answer, "Never mind, David; we shall see who rests the men's backs and grows the best Broccoli." In due time he saw and believed.—R. GILBERT.

HYACINTHS IN THE OPEN AIR.

SEVERAL statements and queries have been made lately in various gardening publications as to the treatment of imported bulbs of Hyacinths after they have flowered in pots, and as to whether it was of any use keeping them. I think the best answer I can give on this question is to enclose you a few spikes cut at random from my garden. I am in the habit each year of receiving from Messrs. Jas. Cutbush & Son of Highgate some sixty or seventy bulbs. These are bloomed in pots, and after they have done blooming, are placed in their pots in a tolerably shady part of the garden out of sight, often remaining in that position until the bulbs are well ripened, when they are shaken out of their pots, the roots taken off, and then put into a box and left there until planting time in October. They are simply planted in clumps in the borders, about six or eight in a clump; no care whatever is taken for them, they come up year after year, increase in numbers, and form a very gay addition to the borders at this time of the year. The accompanying spikes are taken at random from the garden, and I think that you will say they would not disgrace a collection grown in pots from imported bulbs. Notwithstanding the weight of the truss the stem is so strong that it is not until the blooms begin to fade that the head hangs down. When they have all died I sow in the space occupied by them some Mignonette, which flowers on well late into the autumn.—D., Deal.

[The spikes accompanying this communication were very fine, as good as many we have seen obtained from imported bulbs under pot culture.]

BOTANICAL EXPLORATION IN NEW ZEALAND.—Those who take an interest in our Alpine flora will be pleased to learn that Messrs. Arnold and

Adams, who left Christchurch a week ago on an exploring tour in the Southern Alps, returned yesterday with a large collection of plants. On Friday the ascent of Mount Torlesse was made after four hours' hard climbing, and they took down the cairn on the top peak and rebuilt it. When at the summit the Alpine travellers suffered considerably from thirst, which they managed to relieve by melting the snow which lay in a depression near the top some 10 feet deep. After enjoying the magnificent panorama below them they commenced an attack upon the rich store of plants found upon this mountain. Numerous examples of *Raoulia pygmaea*, *Celmisia*, *Gaaphalium*, *Aciphylla*, *Cotula*, and of rare Alpine Mosses were collected. In the course of their explorations on Friday and Saturday they came upon a valley on the western slopes at a considerable elevation, surrounded by almost inaccessible rocks, and from the fact that the place was teeming with *Senecio Lyalli* and other plants which have not been previously collected nearer than Arthur's Pass, the botanists felt satisfied that they had struck a patch of country hitherto unknown. The valley was remarkably rich in new species, and the botanists were amply rewarded for the discomforts experienced and hard climbing they had undergone. As specimens were obtainable in fine condition they were collected and dried on the spot, so that they may be forwarded to Kew for description and classification.—(*Christchurch Press*.)

EUCHARISES NOT FLOWERING.

THE letter of "Duckwing" in your last week's Journal gave a very good description of what it is possible to do even with one small hothouse. Unfortunately he omitted the capacity of the house.

In his description of the cultivation of the beautiful *Eucharis* he says directly the flower stalks appear the plants are watered most freely, but he does not say how to treat them if no flower stalks appear, as in my own case. I have three 14-inch pots of *Eucharises*, two of which show no flower spikes, the third produced four blooms once in three years. I have kept them in a forcing house which is scarcely ever below 55° in the coldest night in winter, and with sun heat in summer it is often 80°. The plants look healthy with good foliage, but that is all.

About a month since I plunged them in cocoa-nut fibre refuse, with bottom heat. Do you think I shall be more successful this time?—EUCHARIS.

[It appears to us that the size of the house referred to is not material. Your plants are possibly overpotted and have not been sufficiently rested. Do you not perceive there are "no" flower stalks on "Duckwing's" plants during their resting period, and that the dryness after growth induces their formation? Try the plan recommended on page 317 of resting the plants when good leaves are developed, and flowers may follow in due time.]

NOTES FROM MY GARDEN IN 1884.—No. 3.

HARDY PLANTS.

ONE of the great advantages of cultivating hardy plants is, that no matter what may be the character of the season, these are some of the plants which will rejoice in it. Even in such an awful year as 1879 there were some moisture-loving plants that did not think it too wet, while, trying as was last summer to many species, there were others that thrive in it.

I have no doubt that many of the gaps which are now noticeable on rockeries and in borders are to be attributed to the excessive dryness of the season, and other effects of it are noticeable. I had two large clumps of the common Christmas Rose, *Helleborus niger*. They had been in the same position for years, and have always done well, but this winter they had not half a dozen blooms on them, while the leaves remained in the bud form on the surface of the ground for fully three months, and are only now in April beginning to unfold themselves. I can attribute this to no other cause but the weather of last year. Then, again, some plants of *Primula* of the *cashmeriana* and *purpurea* type have in previous seasons had large leaves, and the flowers came so early that they were cut off by the frost. This spring they have had very little foliage, the flowers have come later, and have not been at all injured.

My culture of hardy plants comprises what are ordinarily called alpines and those herbaceous plants which, from the stately *Delphiniums* to the lowly *Phlox*, can be so easily cultivated in most places. I have one rockery about 100 feet long by 4 feet wide, and other smaller ones, and a tolerably fair space of border; and in writing of them in the past year I shall mention such as did well, and what I would advise all lovers of flowers to grow, beginning at the earliest part of the season and going on till the late autumn.

Cyclamens.—These are the very earliest of our spring flowers. Long before the Snowdrop droops its graceful head, or the *Crocus* expands its yellow blooms, the little lowly *Cyclamen* rears its tiny flowers. As I have written this word rear, I cannot refrain from telling a story which, although not exactly bearing on horticulture, is too good to keep to myself, and I have no doubt will be relished by some of my brethren to whom Her Majesty's Inspectors of Schools are a not much-loved race. The other day an inspection took place at the workhouse of which I am chaplain, and after the children had read a piece on the Palm tree, the Inspector was anxious to ascertain if they knew its meaning. "The Palm rears its head some 70 or 80 feet" was in the passage. "Now, what is the meaning of rear?" Dead silence. "Well, did you ever see a horse?" "Yes." "Did you ever see a horse rear?" "Yes, sir." "Now what does a horse rear?" "A colt, sir." Well I fairly burst out in a loud laugh in which H.M.I. (who is a good specimen of his class) joined,

and said, "Well, so it does; but that is not what I meant." But now as to the Cyclamen. The hot summer seems to have suited them, for although on one of the very hottest pieces of rockwork I have, two plants had a hundred blooms each on them. There is one, a variety of Atkinsi, with very pointed and marbled leaves which does not seed, and which I cannot get anywhere. The others have seeded all over the rockery, and plants are continually springing up amongst the Omphalodes, Saxifrages, &c. Chionodoxa Lucilæ was very good, the clumps have increased in size, and all round them I see quantities of seedlings coming up, so that it ought soon to be very plentiful. I sowed some in a pan, and every seed I think germinated. Some writer in a contemporary has written against it, as if it was not wanted when we had Scilla sibirica, but they are entirely distinct, the Scilla being of a dark metallic blue, the Chionodoxa a bright carulean colour.

Anemone fulgens was another plant which seemed to rejoice in the hot summer. I cannot understand why it should be said that it is necessary to import tubers of this each year if you want it to flower well. Mine have all flowered most fully, and this spring better than ever, and there is no flower that I know of so intensely dazzling a scarlet. Anemone apennina is another plant which did well, but I see it has spread away from the centre of the patch. Of the Androsaces the only two which did well with me were lanuginosa and sarmentosa. I thought I had succeeded with carnea and carnea eximia, but they both failed with me last year, and as I see the most opposite modes of treatment recommended for it I am confirmed in my opinion of the great difficulty attending its cultivation. Lanuginosa, on the other hand, is easy, and where it can be planted so as to hang down over a stone, and its soft woolly foliage can be protected by a piece of glass or a conical handglass in winter, it will do admirably. A. sarmentosa has done wonderfully with me, a small plant has now so increased as to cover a space 18 inches square. I, in one of my former notes, doubted as to its flowering well, but last year every rosette sent up its pretty head of bloom, and I can see this spring that it is going to do the same. Cypripedium spectabile again flowered well, some of the stems having two flowers on them. It required, owing to the hot season, extra watering, and I hope that they will start up again presently; the space where they are is getting too confined for them, but I am unwilling to remove them. I had tried one or two other terrestrial Orchids, but they did not do well. My daughter is, however, I think, succeeding with the British species, and these are generally considered difficult to grow.

Ramondia pyrenaica also did very well. It also is getting too large for its space, but I have not been so afraid to move it, and I find that although it thrives best when shielded from the sun's rays, it will really do well in any position. Of the Primulas I have already written. They received a very great baking, but as I find with the wild species that it recovers from this very soon, so I expect it will be with them. Of those of the P. Cashmeriana type, P. spectabilis, and P. pulcherrima (all very much alike) in former seasons the leaves were very large, the blooms very forward, so that they got soddened and spoilt by the frost and wet of early spring. This year the foliage was scanty, and the flowers were produced much later, so that I have had a very fair bloom. Rosea was charming with its bright-tinted flowers, especially in the bud. P. auricula marginata was also very beautiful, its foliage alone making it a pretty object. P. Sieboldi has also done well and spread a good deal on the rockery, and is very pretty and bright. I have been troubled to get the Hepaticas, especially angulosa, to answer, but I last year removed it to another rockery in which I could see no great difference, but it has thriven well. The same was the case with Saxifraga oppositifolia, which I have tried in many places, and at last it has made itself at home and has become a large plant. Aubrietia Ingrami, or rather Ingram's variety of the common one, has been exceedingly beautiful, and so were the vernal Phloxes, brilliant in their masses of colour. Another plant that did well with me, and of which I am not a little proud, is Aethionema coridifolium. I had it for grandiflorum, which it certainly is not, and has formed a good-sized clump. Of the Dianthi, neglectus has formed a fine clump, while what I have as D. deltoides is a complete weed, and has to be kept in check continually. D. Seguierii is very late-flowering and pretty. Dodecatheon meadia has become, in the only moist piece I have on my rockery, a fine healthy plant, and gave abundantly its curious blossoms. Amongst the Saxifrages I have found Wallacei very satisfactory, and also albo-purpurea, one of the prettiest of the mossy section. S. longifolia, the queen of Saxifrages, blossomed, and then perished. Of the Gentians I cannot say much, for while I have found G. verna do well in pots, I cannot get it to succeed on the rockery. For this I am really sorry, as it is one of the most lovely of alpine. G. acaulis, on the other hand, is a very easy plant to grow, and has had a fair number of its lovely blue flowers. I mean to try it again under the treatment recommended by Mr. George Paul—namely, turfy loam, peat, coarse sand, and limestone chippings. The Edelweiss did not do so well as in former years, and the plants do not now look as vigorous as they ought to do. Lithospermum prostratum, usually an easy plant, has been again a failure with me, the only plant which is doing well is on a very sunny position on my front rockery. Myosotis dissitiflora has established itself at the back of the rockery, and, as is its wont, has scattered its seeds far and wide. It requires to be well looked after or it will overpower other things.

Omphalodes Lucilæ I am disappointed with. I have a good plant of it, but it does not creep as does verna, and although of a most lovely shade of blue, the trusses are very small, and in that way disappointing. Silene acaulis, although a native plant, is one that has very much bothered me. I have tried it over and over again, but cannot boast of any success. The plants I now have look better than their predecessors, and I must

try to protect them with glass in the winter, for it is one of those alpine which suffer much, I am sure, from the constant changes of dryness and moisture to which they are exposed in our lowlands, changes which do not so much occur in the high altitudes of our own country where they are found. The Soldanellas, too, I have not found amenable to culture in the open air. I wish that I could manage them, as, although very tiny they are very pretty.

Such have been some of my experiences with alpine plants on my small rockeries, and I may truly say that there is no part of my garden which has given me more pleasure at this time of the year, April and May especially. They are a never-ending source of delight. I cannot boast of large quantities of the various kinds, but this I have neither space nor means for. I do the best that I can, and it is one of the pleasures of growing this class of plants that so many species of such very diverse characters, flowering at different seasons of the year, can be cultivated. There are, too, always pleasant surprises, for oftentimes a plant comes up of whose existence you were ignorant or had forgotten, and I am sure that many of the readers of the Journal miss a great pleasure in not attempting their growth. Choose a sunny (not shady as so many do) part of your garden, get some rocks or stones, make it as natural as you can, and for a few pounds you will be able to stock it with a series of plants which will well reward your care and attention.—D., Deal.

IMMEDIATE INFLUENCE OF POLLEN ON FRUIT.

At a meeting of the Academy of Natural Sciences of Philadelphia some time since Mr. Thomas Meehan directed attention to an ear of Indian corn sent by Mr. Burnett Landreth, which had nearly all one side with brownish red grain, the other side creamy white, which was the normal colour of the variety. Usually the intermixture of colours which occasionally occurred in an ear of corn is attributed to cross-fertilisation. It is apparent that this could not be the case in this instance. The whole solid block is coloured, and at the edge of the coloured mass only half a grain would be coloured in some instances. The colouring influence had evidently spread from some central point, quite independent of any single grain, and had spread from grain to grain through the receptacle until the colouring material was exhausted. In cross-fertilisation, from the entangled position of the silk-like pistils, no such regularity of colouring in adjoining grains could occur. On reflection we may understand that at times colour in corn must come from causes independent of cross-fertilisation, as the departure in the first instance from one colour must be from an innate power to vary in colour independently of any pollinating influence.

The facts are interesting as bearing on many problems as yet not wholly solved. Much has been said about the changes in nature being by slow modifications through long ages, but we have frequent instances of sudden leaps. There are no gradations between the colours of these grains. Again, it is in dispute how far cross-fertilisation influences the seed. Generally, no immediate influence is conceded; we have to wait till the seed grows, and we can examine the new plant to ascertain the potency of the several parents. So far corn has been the chief and almost the only evidence that the seed or its surroundings are immediately affected; but recently statements have been made that the receptacle in the Strawberry—what we know in everyday life as the Strawberry—is similarly influenced. There are some varieties wholly pistillate, and it is claimed that when pollen is applied from other varieties the resultant fruit is that of the male parent. It is of great practical importance that such a question should be decided by undoubted facts. Experience in other directions does not confirm these views.

The Mitchella repens is really a dioecious plant. Many years ago he found one plant with white berries and removed some portion to his own grounds, where, isolated from others, it produces no fruit. In its native location it bears white berries freely, though the pollen is from the original scarlet-berried forms. Mr. Jackson Dawson had given a similar case on Professor Sargent's grounds, where a white-berried Prinos verticillatus is produced, though it must have pollen from the original red-berried form. Other illustrations were referred to. To those who looked for regularity of rule in these cases, and in the light of the specimen of corn before the meeting, there might be a doubt whether the variation in corn, often attributed to cross-fertilisation, may not in some cases result from an innate power to vary. It did not really follow that the rule should be uniform, for those who had experience in hybridising knew how variable were the results, even from the seed of a single flower. Parkman had obtained in Lilies seedlings so exactly like the female parent that only for the remarkable form from the same seed-vessel, known as Liliun Parkmani, it might have been doubted if some mistake as to the use of foreign pollen had not been made. If so little influence could occasionally be found at a remote end of the line we may reasonably look for an immediate influence at the nearer end in some exceptional cases. But there appeared to be no carefully conducted experiments on corn recorded anywhere, though the belief in the immediate influence of strange pollen is a reasonable one so far as general observation goes. It seemed, however, to him, with the specimen of innate variation in corn before us, more careful experiments with corn and other things are desirable.

THREE USEFUL OENOTHERAS.

OENOTHERA ANISOLOBA (fig. 64).—This species is of erect habit, growing to the height of about 2 feet. The flowers, which are white, very much resemble those of O. taraxacifolia, but are not quite so large, and the petals are more lobed. They also assume a pinkish tinge before they fade. The radical leaves are entire or obscurely toothed, those of the stems deeply pinnatifid, and all parts of the plant are slightly pubescent. It is a border plant of sterling merit, and may be included with credit in every collection of hardy plants, however select. It can-

not, however, be said to be entirely hardy, and I account it a little less so than *Æ. macrocarpa*. Like that species it cannot endure a wet sodden soil in winter, and it has been recommended to remove the soil from round the crown of the plants in autumn, replacing with dry sandy compost, and then during the winter putting a little mound of sawdust or cocoa fibre over each, covering the whole with an inverted flower pot or hand-

Æ. SPECIOSA.—A handsome white-flowered species, 18 inches to 2 feet high. It flowers profusely on a lengthened spike, each flower 3 to 4 inches across. They are more fragrant, and also appear to expand more frequently during the daytime than those of many of the other sorts. It is also unique in preserving its colour to the last, not fading off pink or rose like the others. It is sometimes used as a bedding plant, but this is



Fig. 64.—*ÆNTHERA ANISOLOBA*.

glass. This may be necessary in clayey soils, but in those of a lighter texture a handful of dried fern laid over each plant and pegged down with two stout willow sprays is all that is required. For soil it prefers a mixture of peat and loam, rich and open, but not too dry. As it cannot be so conveniently propagated from layers as the prostrate sorts, careful division of the crowns early in autumn is advisable.

not its forte, as it does not show to advantage amongst its garish neighbours. The root leaves are twice pinnatifid, those of the stem remotely toothed and slightly downy. Blooms from June until late in autumn.

Æ. FRUTICOSA.—A robust yellow-flowering sort, with half-woody stems, which, growing erect at first, afterwards assume a decumbent habit. The flower stems, which are seldom branched, rise to a height of between

2 and 3 feet, terminating in a short corymb of yellow flowers, which appear during June, July, and August. In winter it forms a dense cushion of oval-shaped dark green or purplish leaves, and can be quickly and easily increased by division. As an ornamental plant it can hardly be said to rank very high, but it looks well on rockwork when that is on a sufficiently large scale. *Æ. serotina* appears to be only a variety of this, differing from it chiefly in having leafy flower stems.—R. D. T.

MANAGEMENT OF HORTICULTURAL SOCIETIES.

It was far from my intention to continue a discussion on this subject. My strongest contention is simply that all societies who claim to represent large areas, which I presume is the aim of the Liverpool Horticultural Association, as this has not been disputed, is that they should issue a schedule to include all sections, and invite all growers to compete, similar to other large kindred societies, which will tend to the improvement and advancement of horticulture. Mr. A. R. Cox appears to disagree with this, and claims certain restrictions. He further remarks that Messrs. W. Mease and W. Tunnington agree with him that this is an unfavourable locality to produce Onions and Carrots approaching exhibition form. I willingly admit that Messrs. Mease and Tunnington are competent and qualified judges of horticultural products; but this matter requires a broader view, which can only be decided by the executive of the Association, and in their hands I shall now leave it, which has for its objects "holding exhibitions to enable them to compare the results of their knowledge and skill with those of members of other societies and of gardeners from other districts."

The second paragraph of your correspondent's letter is even more remarkable than the admitted impossibility of producing fair samples of the two kinds of vegetables already named, the Wirral Rose Society being established entirely for the encouragement, improvement, and exhibition of one kind of flower; therefore I consider it quite outside the question and unnecessary to reply, although the statement as to my being "a competitor but not in the open classes" is inaccurate.—R. G. WATERMAN.

THE AURICULAS AT SOUTH KENSINGTON.

A fortnight previous to the late Show at South Kensington the prospects of a good display of these ever-increasing favourites looked gloomy in the extreme. That *bête noir* of Auricula growers, the east wind, refused obdurately to budge an inch, and day after day little or no progress was discernible on the plants. Never, perhaps, has there been such a backward season, and the truth of this is demonstrated, if proof indeed were needed, by the fact that many of the northern exhibitors whose well-grown plants are the admiration of everyone were conspicuous by their absence. The best of the Slough Alpines could not be staged, whilst a visit to Great Gearies fourteen days before the Exhibition saw hundreds of plants which could not under the most favourable circumstances be in the running. Mr. Douglas had some very promising seedlings from good crosses which he had hoped to exhibit; but their non-appearance must be laid to the charge of the unpropitious state of the weather, and our expectations of seeing something good from that veteran grower have for this year been doomed to disappointment. In more than one case "firing up" had to be resorted to, to which Auriculas never take kindly. "How quickly Nature falls into revolt," and how thoroughly does our climate merit the description of being pre-eminently fickle—for, as if to make amends for past waywardness, Sol appeared in full strength a few days before the Show, playing sad havoc with many plants which had been erstwhile carefully tended and expected to be in grand form for the all-auspicious Tuesday.

Turning to the exhibits, I am bound to state that, although there were hardly so many staged as on previous occasions, the Society had every reason to be satisfied with the result as a whole. In former years exhibitors in the classes for single specimens were allowed to show as many plants as they chose. Now, however, a limit of two is enforced, the outcome of which has been that small growers have been able to exhibit with some chance of success. In these single-specimen classes alone was there any appreciable falling off, the reason for which is self-evident. We missed such redoubtable competitors as Messrs. J. T. D. Llewelyn and Ben Simonite, whose names are household words. Yet the northern men were well represented in the unapproachable Rev. F. D. Horner and Messrs. Brockbank, Bolton, and Pohlman, despite the difficulty they must have experienced in getting their plants forward.

Referring to the exhibits *seriatim*, Mr. Douglas was an easy winner in the class for fifty. To my mind Mr. Turner's plants were hardly so good as usual, whilst Mr. Douglas had a great advantage over him in that he had a good per-centage of such grand flowers as *Conservative*, *Silvia*, *Dr. Kidd*, *Mrs. Moore*, and others which might be enumerated. As fine a plant of *Talisman* (an attractive and high-class green-edge raised by Mr. B. Simonite) as we remember to have ever seen occupied a prominent position. Last year Mr. Turner showed a plant of the same variety in rare form, although it is generally a shy doer. Mr. Douglas's flowers, too, were sturdier, albeit free from coarseness, the fact of their not having been top-dressed in the orthodox fashion probably having something to do with this. Such old sorts as *General Neill*, *Mrs. Smith*, and the newer *Colonel Champneys* stand no chance against recent improvements, and I rather incline to think that to some extent Mr. Turner lost points through including such varieties among his fifty.

The Rev. F. D. Horner again had the honour of beating his *confrères* in the class for twelve. Nine plants were of his own raising, none of which are in commerce. The most noticeable among Mr. Horner's plants was the premier *Auricula* of the Exhibition, named *Greyhound*—a grey-edged flower with tube, paste, and body colour all evenly balanced. Its habit is good, and there was little difficulty in awarding it the much-coveted blue ribbon. We had seen the reverend gentleman enter the Show in the early morning in a great state of excitement at seeing so many of the cognoscenti and greeting old friends once again, and imagined from the cage which he had in his hand that he had turned to bird-fancying and had picked up a bargain in London. But a closer inspection showed that this cage, which had glass on each side of it, contained the enviable *Auricula* which obtained the much-coveted honour of outdistancing all its compeers in the Exhibition. George Lightbodies were somewhat late this year. Mr. Douglas's were not out, but admirable plants were shown by the Rev. F. D. Horner and Mr. Orchard, the well-known *Chrysanthemum* grower, of Coombe Warren. Curiously enough, *Lancashire Hero*s came out exceedingly well. But I am digressing. Mr. Douglas's second-prize twelve were little inferior to Mr. Horner's, a grand *Duke of Albany* of his own raising and the recently certificated *Mrs. Moore*, a valuable grey-edged variety, being especially noticeable. In the classes for six Mr. Horner again carried off the palm, Mr. Douglas running him very close. The latter's collection contained one of the best *Prince of Greens* in the exhibition, although hardly so refined as the premier plant of the same name shown so well last year by Mr. Pohlman. Mr. Dean also may be congratulated on having beaten Mr. Turner in this class with plants which could not have been fresher.

The classes for four plants and pairs were well filled, and some highly creditable plants were shown, especially by some of the Reading amateurs. In single specimens such standard sorts as *Lancashire Hero* (shown both as a green and grey), *Prince of Greens*, *Acme*, and *Heroine* took the majority of the prizes. Mr. Turner's new green edge *Justus Corderoy* was placed, and is a handsome well-proportioned flower with a peculiar violet ground, of which we shall hear more anon. The weak paste and pale tube were, however, rather against the flower. Such good kinds as *Alexander Meiklejohn* and *John Waterson* seem to have been late this year, and *Topsy*, which came out so well at the last exhibition was not in it this season. Only one certificate was awarded for seedlings—viz., to Mr. W. Brockbank for the grey-edged *W. Brockbank*, a flower with a rich tube, dense black body colour, and solid pure paste. Mr. Horner's *Redwing*, a green-edge of the highest class, and Mr. Dean's *Green Criterion* were very promising, but too young; a strong plant ought to produce something good. Alpines were well shown by Mr. Turner, who is continually bringing out new and high-class varieties, and by Mr. Douglas.

Taken as a whole there was little room for fault-finding, and in view of the new departure adopted by the Society the number of exhibitors and the support and encouragement received at all hands afforded ample proof that the exhibitors and subscribers at large thoroughly approve of the Committee's action in turning over the new leaf they have done. Despite the fact that the late Hon. Secretary, Mr. Dodwell, still holds the funds belonging to the Society it is, I believe, a fact that, thanks to the spontaneous offers of several gentlemen in the way of special donations, not only has the whole of the prize money and expenses been paid, but a creditable balance (considering all the circumstances of the case) is left in hand towards next year's operations.

Whilst on this subject might I be allowed to suggest the propriety of an *Auricula* election on the lines of the late *Chrysanthemum* election? It would be a sterling guide to beginners, of whom there are not a few, and a boon to those who already have entered on the thorny path of exhibiting. Disappointment would in many cases be prevented if a clear idea were given of what those anxious to make their *début* at *Auricula* exhibitions should secure in the way of varieties. The election should be confined to those varieties which are in commerce, as only the favoured few could judge of the merits of the newer kinds which have not been distributed, whilst at the same time opinions would be given which would be misleading and unsatisfactory.—A VISITOR.

AMONG THE RANGES OF NEW ZEALAND.

NEW ZEALAND colonists do not seem to recognise the fact that in their own mountain country and forest-clad valleys they have a patch of the earth's surface which has been left behind in the march of development elsewhere. The plough and the spade have been busy on the plains, but the mountains are unaltered, and if we do not possess the traditions clinging around the ancient castle or ruined keep there are natural traditions left us among the Southern Alps. The geologist has "the testimony of the rocks" on which can be read the story of this period of the earth's formation written in almost imperishable materials, while the student of natural history can also find objects of interest to him. The gigantic birds have disappeared, but the Kiwi can be studied as a relic of the fauna of a past age. The flora remains, and the strange forms of vegetation which meet the eye in *Dracophyllum*, *Celmisia*, and *Raoulia* are sufficient to convince the botanist that he is among the plants of a former age. So much by way of introduction to a sketch of camp life among the ranges, and a descriptive account of a botanical exploration undertaken by the writer and a friend in the Christmas holidays.

We left Christchurch on December 30th by what will soon, it is hoped, be called the Great Western Railway, taking with us a tent and provisions calculated for a week. From Springfield we travelled by coach in a pelting rain to the foot of Porter's Pass. It was our intention to camp in the hut at Lake Lyndon, but it had been burnt down, and as the rain was falling

heavily we accepted the offer of Mr. Cassidy to pass the night in the whae, at the Springs' stables. We dried our clothes by a roaring fire, and made ourselves comfortable for the night. The next morning it was still raining hard, but we determined to make a start for Castle Hill. On the road we noted fine specimens of *Aciphylla Colensoi*, *A. Lyalli*, commonly called the Bayonet Plant or Spear Grass, and among the tussocks we saw *Pimeleas Geraniums*, *Raoulia*s, *Gentiana*s, and other plants. Forging the Porter River and recrossing by a suspension bridge, we arrived at the fortifications at Castle Hill, after a smart walk of about an hour and a half. The plant we wanted was *Notothlipsis rosulatum*, but after a minute search among the rocks and limestone slides we failed to discover it. A *Cystopteris* was, however, met with which has many points of resemblance to the British *C. fragilis*, but its exact nomenclature has not been determined. Many varieties of *Ranunculus* were seen; *R. pinguis* was common, also *R. geraniifolius*, which was in full bloom among the rocks. Two varieties of *Clematis*, *C. indivisa* and *C. foetida*, were met with. *Ligusticum aromaticum*, *Cotula*s, and *Lagenophoras* were plentiful. *Stellaria gracilentia*, the New Zealand Chickweed, is a neat plant and not without its attractions to those who like alpine flowers. Having examined the western side, we climbed the cliff, standing up like a ruined castle on the northeast. The loose nature of the rocks, which broke away in our hands, made it difficult to get the plants which grew high up in the crevices of the cliffs. Some rare species of Mosses were collected, also a small bulbous plant, belonging to the Irids, with white flowers, borne on stems 6 inches high. Growing high up among the rocks was a *Ranunculus*, which on examination appeared to be a cross between *R. pinguis* and *R. Godleyanus*. The leaves were 6 inches on petioles half as long as the leaf. The flowers were gone, but the plants were in seed, the stems being 18 inches high. Good specimens of *Carmichaelia nana* in bloom were obtained. Against a heavy downpour of rain we made our way back to the Seven Springs, where we camped for the night. The next morning we turned out at six o'clock to see the New Year's sun tipping the mountain tops with gold. In good spirits at the prospect of fine weather we soon had tent and provisions packed, and getting a lift in a passing trap we reached our camping ground about 3500 feet up the slopes of Mount Torlesse about midday. Our first work was to pitch the tent securely, collect a supply of wood for the fire, and make our beds of tussock and *Dracophyllum*, not quite equal to the feather bed of civilisation, but not to be despised on the mountain side. Throw in a few plants of the scented *Celmisia* and you have a perfume in the tent fit for the boudoir of a duchess. The plants near camp were *Celmisia Lyalli*, *C. spectabilis*, *C. gracilentia*, straggling clumps of *C. viscosa*, *Gnaphalium bellidioides*, *Raoulia*s, *Acaenas*, *Ourisia*s, *Aciphyllas*, *Dracophyllum*s, *Gaultheria*s, *Gentiana*s, *Epacris*, *Carmichaelia crassicaulis*, and *Coriaria thymifolia*, the little mountain tutu. Of Ferns we saw *Lomaria alpina* and *Hypolepis millefolia* growing on the side of a creek which ran close to the camp.

Deferring the main ascent of the mountain till we had the whole day before us, the afternoon of New Year's day was spent in botanising the spurs. As we got higher we lost the big Spaniard, *Aciphylla Monroi*, a very dwarf variety taking its place. We collected plants of this, also of a pretty *Euphrasia*, growing on the sides of clumps of herbage, in the middle of a shingle slide. At this elevation a cloud enveloped us, so that objects twenty yards in front seemed to be wrapped up in fog. From the aromatic perfume which filled the air we could tell that the little scented *Celmisias* *discolor* and *viscosa* were not far off, and we soon came upon large patches of them. *Forstera tenella* was growing near, also *Logania tetragona* with its peculiar foliage on bare shingle. With our knives we commenced to extract some fine examples of *Raoulia mammillaris* from the rocks on which it grew, the roots penetrating the crevices. It is also called the New Zealand Pincushion, and is often used for that purpose by the shepherds' wives. The Vegetable Sheep grows to a height of 2 feet and twice as long, and from its resemblance to a sheep lying down the shepherd has often tried to muster this deceptive plant as a straggler from his flock. As far as at present ascertained there are three sorts of Sheep, *R. mammillaris*, the most common, and *R. eximium*, more densely covered with woolly hairs. Blooms were collected and put in spirits of wine to send to Kew for examination. Having a good load of plants, we started to descend, as it was getting dusk. Coming down a shingle slide too quickly one of us tried to pull up in front of a *Dracophyllum*, and seizing the bush which partially arrested his descent he fell into a friendly Mountain Totara, escaping without a bruise. In camp again at half-past eight o'clock, lighted a fire, got the billy boiled, and made the tea; drizzling rain, very dark. After a good dinner of saveloy, cheese, biscuits, and tea, which we enjoyed with appetites only known to the mountain climbers, we sorted the specimens for drying and put them under stones to press. Having made the tent secure from the visits of the impertinent Weka we got into our blanket bags at 11.30 P.M. and were very soon asleep, after the fatigue of a long day's work.—F. N. ADAMS, *New Zealand*.

(To be continued.)

SURFACE ROOTING IN LILIUMS.

I GROW a considerable number of bulbous Lilies, especially *L. auratum* and *L. lancifolium*, and have for some years closely studied their cultivation, and therefore welcome the observations of "Scientia," page 333. The Editor's recommendation is sound to encourage stem roots, as feeding assists during the flowering stage, not in the preliminary growth. This points to potting shallow, or in other words, have the tip of the scales pointing above the surface, leaving room for adding more soil later on. It is quite wrong from this point of view to bury deeply. The plant blooms and lives on the food supplied by the numerous voracious little surface roots, and when the flower dies and you turn the plant out of the pot, you find a large mop of roots at the base of the stem, and very frequently the scales or scaly bulb have already decayed. If not, the best thing to do is to feed and grow on after the flowering, so as to fully ripen and mature the stem, foliage, and bulb. Without going to the trouble of turning the plant out of the pot on the hand, any experienced grower can see at a glance if it is healthy. But I have had fairly good blooms

of *L. auratum* and the varieties of *L. lancifolium* without a single basal root; in fact, as I have said, in a few instances the bulb had decayed some time previously, and life was maintained by the stem roots alone. My recollection is that in most of those cases decay was caused by too much water. Water-logging often takes place with Lilies without being noticed. This points to plenty of drainage; sand at the base or around the bulb, and a more frequent use of peat.

I am satisfied, though very successful, we have much to learn in reference to Lily culture yet. I would not, however, at all agree with "Scientia" in recommending that those stem roots should be "broken off as they appear." Discourage them by not allowing any soil to touch them until the pot is full of roots, then, as stated before, add additional soil to complete the flowering, and when that is over feed until withered, and let all the sap return to perfect the bulb. This is a point too seldom thought of; indeed, I would commend it to the notice of your excellent correspondent "Thinker," the treatment of all flowers, especially pot Lilies, when the blooming is over. What is so common as to see them thrown anywhere when their glorious blooms have decayed, and before half their growth or maturation is completed? Yet these very bulbs may be far better than our uncertain friends, the imported ones, and far earlier. My imported ones, which have so far given me very great trouble in examining and cutting out the fungus-affected parts, are now only half an inch over the soil. The home-saved bulbs of last year of the same kind are in several instances 2, 3, and 4 feet high without any forcing. Heat, or forcing of any kind, for those magnificent flowers I consider most injudicious, though there are several, especially of the Trumpet Lilies, that must be protected against winter frost, but even that number is a decreasing quantity. For instance, some bulbs of the Bermuda Lily, *L. Harrisii*, little different from *L. longiflorum*, escaped unscathed, though forgotten, in some leaf mould last year, which must have been frozen.—W. J. MURPHY, *Clonmel*.

THE WAKEFIELD PAXTON SOCIETY.

THE Paxton Society of Wakefield, which was established about nine years ago by a few gardeners and amateurs, has by the great support that has been accorded it become one of the most important and best managed associations of its kind in Yorkshire or anywhere else. It numbers about 200 members, has a splendid room capable of accommodating them all, and a good library, which is growing yearly. There is an annual gathering of the members, who with their friends dine together, cementing old friendships and enrolling new recruits in the local army of horticulturists. The contribution to the Society is trifling, and the expenditure correspondingly small, that of the past year only amounting to about £30, the directorate contriving to have a substantial balance on the right side of the ledger. The funds of the Society are not expended in big prizes for an exhibition, nor are they likely to be. It is not what may be termed a "Show" Society at all, but educational and social.

The eighth annual meeting was held on the 21st inst., and so great was the demand for tickets for the dinner that Mr. Councillor Lupton, the Society's curator and caterer, had to engage the capacious lecture hall of the Church Institution for their accommodation. In the afternoon of the same day a meeting was held for the revision and adoption of rules that had been formulated with the object of establishing a Yorkshire Association of horticultural societies, and delegates attended from kindred societies in surrounding towns, including the following:—Mr. Woodcock and Mr. Walker, from the Sheffield Floral and Horticultural Society; Mr. Simmonds and Mr. Cooke, of the Sheffield and Hallamshire Gardeners' Mutual Improvement Society; Councillor Mellor and Mr. G. E. Elliott, of the Huddersfield Paxton Society; Mr. Oswald, of the Rotherham Gardeners' Mutual Improvement Society; Mr. Baynes and Mr. Sundley, of the Leeds Professional Gardeners' Friendly Benefit Society; Mr. Henshall, Mr. Ballinger, Councillor Sykes, and several other members of the Barnsley Gardeners' Mutual Improvement Society, &c.

Mr. Herbert Chapman, the energetic Honorary Secretary of the Wakefield Paxton Society, was the originator of the movement, the object of which is to afford means of intercommunion between gardeners and lovers of gardening on suitable occasions, the interchange of papers that are read at the meetings of the different societies, and the rendering of mutual assistance in strengthening the societies and benefiting the members. It appears that a few years ago a similar association was commenced in a small way of Yorkshire Mechanics' Institutes, and now no less than 271 of these institutes are amalgamated, and the union possesses a library of 22,000 volumes in circulation amongst the members on the payment of a merely nominal sum. These associations have nothing whatever to do with the question of wages, but are wholly educational, the professional improvement of the members being the sole object in view. The system as applied to horticulturists is so entirely new that the rules adopted at the meeting referred to cannot be unacceptable to horticultural readers generally. They are as follow:—

RULES FOR THE YORKSHIRE ASSOCIATION OF HORTICULTURAL SOCIETIES.

- I.—The Society shall be called "The Yorkshire Association of Horticultural Societies," and any society having for its objects the study and advancement of horticulture shall be eligible for admission.
- II.—The objects of the Association shall be:—1, To consolidate existing horticultural and gardeners' mutual improvement societies within the county of York, and to assist in the formation of similar societies where they do not at present exist. 2, To promote the study and practical application of the science of horticulture, and encourage research into other branches of science which bear directly upon the practice of gardening. 3, The interchanging amongst the several societies in the Association of essays, books, periodicals, and other literature having reference to horticultural matters. 4, To facilitate and assist the united action in all matters relating to the welfare and advancement of gardeners and gardening.
- III.—The Association shall consist of the several societies taking part in its formation, and such other societies as may from time to time be admitted in accordance with Rule IV., and it shall be under the management of a Committee consisting of a President, two Vice-Presidents, Treasurer, Secretary, two Trustees, and representatives from each society in the Union.
- IV.—Any society seeking admission shall forward an application in writing, together with a copy of its rules, to the Secretary of Union, and the Committee of Management

- shall have power to admit such society subject to confirmation at the next annual meeting.
- V.—The annual meeting shall be held on the last Monday in September at such hour as the Committee may determine. At this meeting the Committee shall present a report of the proceedings of the Association during the past year, together with a statement of the accounts duly audited. The President, Vice-Presidents, Treasurer, Secretary, and Trustees shall be elected, the place of the next annual meeting fixed, and such other business as may relate to the operations of the Association may be discussed.
- VI.—Each society shall annually elect two of its members as representatives of such society to act on the Committee of the Association.
- VII.—The annual subscription (on the 1st of September in each year) shall be as follows: Societies having less than fifty members or subscribers, 1s. 6d., or 3s. per member; societies having more than that number, £1 1s.—half payable on May 1st, the other half in September.
- VIII.—The secretary of each society shall forward to the Secretary of the Association a copy of the annual report, lecture or essay lists, schedules, &c., of such society as soon as they are issued.
- IX.—Any member of a society in the Association shall have the privilege of attending as a visitor the ordinary meetings of any other society in the Association.
- X.—The Committee shall have power (subject to the approval of the annual meeting) to consider the membership of any society at an end, in case it shall not have conformed to the rules or otherwise acted in a manner inconsistent with the objects of the Association.
- XI.—The Secretary shall call a special general meeting of the Association whenever requested so to do by the Committee or by any three societies in the Association, and twenty-eight days' notice shall be given to each society of such meeting, or of any general meeting of the members.
- XII.—The Committee shall meet for the transaction of the business of the Association twice in every year, and such meetings shall be held on the first Mondays in March and September each year in the town or place where the last annual meeting took place.
- XIII.—The President, Treasurer, and Secretary of the Association shall be elected from the society where the annual meeting is to be held for that year, and in case of two societies being in one town they shall act entirely as two distinct societies, and as such individually and separately.
- XIV.—No addition or alteration shall be made in these rules except at the annual meeting. Any society proposing to make any addition or alteration shall give not less than one month's notice in writing to the Secretary of the Union, who shall notify such proposals to each society.

The annual meetings are to be held in the different towns in turn, including, where practicable, an excursion to places of local interest, after the manner of the Archæological and other scientific societies, the first gathering to take place in Wakefield in September next. The dinner above mentioned was a signal success. The chair was occupied by T. Senior, Esq., the much-esteemed President of the Paxton Society, who was supported by Alderman Moorhouse (Mayor), Mr. W. H. Lee, J.P. (ex-Mayor), Mr. W. H. Stewart, J.P., Major Taylor, J.P., and other gentlemen, the room being tastefully decorated with plants and flowers. The speeches delivered were exceptionally meritorious, and evinced the deep interest that is felt in the promotion of horticulture in the district. After the usual loyal and patriotic toasts, that of the Wakefield Paxton Society was introduced by Mr. Stewart in terms so felicitous that they cannot be entirely omitted here. After remarking that he considered it the toast of the evening, he said the Society was an institution of which Wakefield was proud. In the Society there were no unhappy divisions either social, political, or religious. Those three elements of dissension were wisely kept aside, and all the members met on one common ground and had one common object. The art of gardening was an old art; indeed, it was said to be as old as the world itself. They were told that their first forefather, Adam, when he was turned out of Eden made himself a garden, and his choice of the profession must have been due to a recollection of the happy state of things in Eden. From that time up to the present there had always been men in whom a passion for gardening was strongly implanted. Gardening was certainly an art which was most closely allied with Nature itself. Nature presents to us many beauties, and we ought all to feel it a great honour and privilege that we are enabled in any way by our intelligence and industry to heighten her effects. There was an old tradition, an old Eastern story, which he considered a very beautiful one, which told them that when their forefathers were turned out of Eden the angels wept, and that where every tear fell a flower sprang up to be a comfort to man. He thought the soul of that man was dead within him which the beauty of a flower could not cheer, and, with Shakespeare, he would say "Beware of him." Any man who could pass through a garden full of beautiful flowers and then say he saw no beauty in it could have no great degree of imagination. It was also said that the art of gardening when most truly appreciated was an art which kept men closely to Nature, and he was the best gardener who most closely followed Nature. He thought the Wakefield Paxton Society closely copied Nature in putting forth new life in the spring. He regarded the Society as a very useful one, because it taught men what could be accomplished by energy and attention. The Society had not been bolstered up by patronage, but had depended for success upon the individual efforts of its own members. Gardeners not only produced plants and flowers, but a very serious and important item of the national food. He wished the time might come when every man could be induced to take a reasonable interest in gardening, and when every man could have the facilities for doing so; because he was satisfied that if a working man could do a little gardening at night, and then return home with a Cauliflower in his buttonhole, he would meet with a smile and a happy welcome. The interest in gardening was very different now from what it was twenty years ago, and the amount of gardening under glass must be tenfold more now than it was then. He was sure that any amateur or professional gardener who felt proud of his profession would agree with him that the Paxton Society was an institution from which they derived considerable benefit and great instruction; and he felt sure that he need not further appeal to them to enlist their sympathy in the toast of "Continued Prosperity to the Wakefield Paxton Society" (applause).

Nor can the reply of the President be passed in silence, so admirably condensed is the character of the Society. He said when he took the position of President he did so with a full determination to discharge the duties to the best of his ability, and he had found it a labour of love. He thoroughly enjoyed the weekly meetings of the Society, and he was very sorry when he was prevented by other engagements from attending them. The objects of the Society were to encourage a love for flowers among the general public, to assist professional gardeners in the duties of their profession, to impart information to amateur gardeners, to instil into the young of the town a love for horticultural pursuits, and to promote, as far as they could, all that was beautiful, great, and good in Nature (hear, hear, and applause). Since the Society was formed it had gradually grown from year to year until it had become a somewhat important institution. He was very proud to be at the head of it, and he believed that by the efforts of its

officers it would become a still more important factor in the education of the morality and virtue of the town (hear, hear). He then alluded in very complimentary terms to Mr. Herbert Chapman, Secretary, and said that too much praise could not be given to him for the infinite trouble and pains he had taken with reference to the formation of a Yorkshire Association of Horticultural Societies, a meeting in connection with which had been held that afternoon (applause). The President referred to the Society's library, to the active staff of officers in connection with the Society, and said that probably there was no society in the town which had so many advantages in connection with it. Whilst the committees of the Mechanics' and Church Institutions had often difficulty in arranging a course of lectures from October to March, the Paxton Society had something both useful and instructive in the form of a lecture or essay every Saturday evening from January to December in each year (applause).

Is there another horticultural society in England that can command the voluntary preparation of an original paper every Saturday evening throughout the year? Many other gentlemen ably addressed the meeting, including the Mayor of the Borough, who said he pitied the man who could not appreciate the masterly speeches which had been delivered that evening; for he knew of no society the members of which could speak with so much intelligence. He thought the Paxton Society was able to hold its own, and need not be afraid of comparison with any similar society in England. If they succeeded in cultivating a taste for horticultural pursuits amongst working men, he believed they would have done a great and a good work, because in nine cases out of ten where they saw a well-cultivated garden they might rely upon it there was a happy home.

Altogether the assemblage was one of the largest, most earnest, and best conducted of its kind we ever attended, and we scarcely expect to see its like again—until our next visit to Wakefield.

NOTES AT THE GARDENS OF ST. JOHN'S HOUSE, WAKEFIELD.

THE gardens attached to the residence of R. B. Mackie, Esq., M.P., are well known to residents of Wakefield and district, principally on account of the fine display of Chrysanthemums which has for several years past been there produced by Mr. Garnet, the esteemed head gardener, and during the continuance of which the gardens are, by the kind permission of his employer, thrown open to the public. At the time of my visit—April 21st—the plants, numbering five to six hundred, were being hardened off in cold frames without glass, but protected at night by mats previous to being placed out in the open grounds. They were all potted singly in 32 and 48-sized pots, and were mostly strong sturdy plants, 10 to 12 inches in height. Mr. Garnet appears to stop all his plants once at about that height, afterwards taking up three stems and having one good bloom on each. At flowering time a long lean-to house facing east is cleared for their reception, the plant stage which is contained in it at other times being taken out, and the plants arranged in a sloping back some 6 feet in width from the back wall to the pathway along the front of the house. This house at the time of my visit was nearly filled with a very fine collection of Roses in pots, mostly Hybrid Perpetuals, in robust health, clean, and very vigorous, each opening numbers of very large and fine flower buds, but which are cut as soon as ready and sent to Mr. Mackie's London house.

In the same garden is a splendid range of glass, built about four or five years since, and containing a large and finely arranged Peach house, three vineries, a conservatory, and a small but very beautiful fernery. The vineries consist of an early house, a Muscat house, and a late house. In the two first-named the Vines are strong and carrying heavy crops of fruit; the Vines in the late house also are breaking strongly and showing plenty of fruit. In the Peach house there is abundance of fruit set, the trees upon the front trellis especially being very heavily laden.

The conservatory contained a very fine display of bloom, consisting principally of Azaleas, Cytisus, Spiræas, Deutzias, Rhododendrons, Cinerarias, and Cyclamens. Of the last-named there are large numbers of plants in 6-inch pots, which have been very fine. The Cinerarias are large plants now at their best, and include many very fine varieties, some of the selfs especially being equal to the best named varieties. Mr. Garnet tells me he procures his seed from Messrs. Sutton & Sons of Reading.

Over the pathway which traverses the back of the conservatory, and which, like the vineries and Peach house, is a "lean-to" facing south, is a wire-trellised archway, over which are trained the *Lapagerias* red and white. The plants are healthy, and are making fine new growths. I was especially pleased with the system of training adopted, which is both novel and effective, and one which might in many cases be advantageously copied. The top of the wire archway, which will be 4 to 6 feet from the roof, is connected therewith along its entire length by very numerous lengths of stout black thread, up which the young growths freely climb, requiring but little attention on the part of the cultivator. When growth is completed and flower buds formed, these threads are detached from the roof, and the young growths thus brought down and trained horizontally along the trellis, the flowers being brought through the wires to the under side immediately above the head of the observer. They are thus most effectively placed, and make a beautiful archway for several months during autumn and winter.

The fernery is most effectively arranged in a series of light rustic arches covered with cork bark, and entirely clothed with *Ficus repens*, which forms a very pleasing effect. Many varieties of Ferns are grown as specimens in pots and as smaller plants in pockets arranged in the cork bark. At the back of this are the potting shed, office, fruit room, frame ground, forcing pits for Cucumbers, Melons, Strawberries, stove plants, &c.; also an excellently arranged Mushroom house underneath the potting shed, and a large wooden building recently erected for the storage

of potting materials, pots, &c., which Mr. Garnet proposes to further utilise for the cultivation of Mushrooms during summer. In the Mushroom house are two beds—one nearly exhausted, the other carrying a heavy crop; also a bed filled with a quantity of excellent Seakale. An excellent arrangement for filling the Mushroom beds consists of a series of trap-doors some 15 inches square in the floor of the potting shed underneath the benches, which open directly into the beds below, and by which means the manure is thus passed down with the least possible trouble.

In the forcing houses and pits are quantities of French Beans in 8-inch pots, very strong and carrying heavy crops; also fine early Melons about 18 inches high, strong and short-jointed. A good collection of decorative and table plants are grown, amongst which I noticed a specimen 3 feet in diameter of the valuable *Jasminum gracillimum*, also a well-flowered specimen of *Meyenia erecta*. The kitchen gardens and fruit trees are in excellent order, indicating the admirable management which prevails.—W. K. W.

THE SIZE OF CHRYSANTHEMUMS FOR EXHIBITION AND DECORATION.

A PAPER upon the Chrysanthemum for exhibition and decorative purposes, read by Mr. W. Iggulden at a meeting in Yeovil early in the present year, is now being issued in pamphlet form, and will unquestionably prove useful to a large number of readers. The cultural instructions are plain and practical, and full lists of varieties are given, including selections by Messrs. Molyneux, Orchard, Herrin, and Mease, which are by no means the least valuable part of the work.

Referring to the size of Chrysanthemum blooms Mr. Iggulden gives the following interesting particulars:—

"To enable would-be prizewinners properly to estimate the value of their blooms I have compiled a few measurements of some of the best blooms that have been exhibited by Mr. Molyneux and other successful exhibitors. It will, I trust, meet a want felt by a great many exhibitors who have not yet seen any of the very best exhibits of Chrysanthemum blooms. These measurements were taken, it must be remembered, from perfect examples, cupped up for exhibition, and consequently those who may think they have larger blooms on the plants must not too readily flatter themselves that they can win the premier prizes 'in good company.' Size alone will not carry the awards, and every bloom must be full, even, and fresh. Any amateur or novice, however, who may grow blooms to near the dimensions I shall give will have good reason to congratulate himself, and may safely venture to compete for prizes at local shows. In most cases I can give only the diameter of the blooms, but where a second figure is added it is to signify the depth.

Incurved.—Golden Queen of England, 7½ inches; Queen of England 7 inches by 3 inches; Empress of India, 6 inches by 3 inches; Princess of Wales, 6 inches by 3 inches; John Salter, Prince Alfred, Mrs. Heale, Jardin des Plantes, Lord Wolseley, Bronze Jardin des Plantes each 6 inches; Golden Empress of India, Alfred Salter, Princess Imperial (Lord Alcester), each 5 inches by 3 inches; Jean d'Arc, 5 inches by 3¼ inches; Hero of Stoke Newington, Prince of Wales, Nil Desperandum, Beauty, White Venus, Princess Teck, Refulgens, Emily Dale, Venus, each 5 inches; Baron Beust, Princess Beatrice, Empress Eugénie, Mr. Bunn, White Beverley, Cherub, Lady Carey, Mrs. G. Rundle, Mrs. Dixon, Mr. G. Glenn, Barbara, St. Patrick, each 4½ inches.

Japanese.—Madame C. Audiguier, 8½ inches by 6 inches; Meg Merrilies, 9 inches; Comte de Germiny, 8½ inches; Baron de Prailly, Oracle, Mons. Astorg, Fair Maid of Guernsey, Thunberg, The Daimio, Golden Dragon, Boule d'Or, each 8 inches; Val d'Andorre, Mons. Tarin, Fanny Bouchariat, Criterion, Cry Kang, each 7 inches; Lady Selborne, Agrements de la Nature, each 6½ inches; Marguerite Marrouche, 6 inches by 4½ inches; Elaine, 6 inches by 4 inches; The Cossack, 6¾ inches; Peter the Great, Grandiflorum, J. Délaux, (F. A. Davis), Mons. Burnet, Japonaise, Duchess of Albany, Triomphe de la Rue du Chatelet, Mons. Ardene, Mrs. Mahood, Flamme du Punch, Soleil de Levant, Hiver Fleur, Mdlle. Moulise, Mons. Délaux, Mons. Desbrieux, each 6 inches.

Reflexed.—King of Crimson, 6 inches by 4 inches; Golden Christine, 6 inches by 4 inches; Mrs. Forsythe, Peach Christine, each 5 inches by 3 inches; Cloth of Gold, Dr. Sharpe, Sir E. Landseer, Phidias, Emperor of China, Felicity, each 5 inches; Cullingfordii, Pink Christine, 4½ inches; Chevalier Domage, Ariadne, and George Stevens, each 4¼ inches.

Japanese Anemone.—Fabias de Maderanaz, Mdlle. Cabrol, each 8 inches; Madame Clos, 6½ inches; Sœur Dorothee Souille, 6 inches.

Large Anemone-flowered.—Acquisition, 6 inches; Fleur de Marie, Empress, Lady Margaret, Mrs. Pethers, each 5 inches; Georges Sand, Madame Goderau, Gluck, King of Anemones, and Queen Margaret, each 4½ inches.

"I have no measurements of Pompons. In my humble opinion these ought to be shown in bunches as grown—that is to say, without being disbudded. In bunches they are pretty and attractive, but singly they are most insignificant."

The pamphlet can be had from this office for 9½d., post free.

GARDENIAS AT LONGLEAT.

GARDENIAS are remarkably well grown at Longleat, and probably it would be a difficult matter to find an equal number of fine plants elsewhere in this country. They form the back line in the central bed of a rather large three-quarter span-roofed plant stove, each plant receiving plenty of room, and all being of about the same size—measuring on an average from 5 feet to 6 feet in diameter, and from 4 feet to 5 feet in height. At the present time they are at their best, hundreds of blooms of good shape and size expanding daily, and during the season thousands of blooms will be cut. Mr. Pratt, however, does not cut all with a piece of growth attached, or this would materially diminish the supply both now

and later on, but the majority are gathered with the short footstalk only attached, and they have to be "mounted" if required for bouquets. These plants have for some time been rooting in small pits formed with loose bricks. They are still in 11-inch or 12-inch pots, but these are broken in places so as to admit of the roots finding their way into the soil in which the pots are plunged. This plan is found to answer better than permanently planting, as in the case of these large plants (for they have been giants for several years) it proved a dangerous experiment to turn them out of the pots. No matter how well they might have been planted, it would have been impossible to keep the old ball properly moistened without saturating the surrounding soil, thereby rendering this unfit for the rather delicate or fastidious Gardenia roots. At Longleat the loam is rather heavy, but they appear to use it freely for Gardenias, and not much besides good leaf soil and sand. In our case the loam is also heavy, much too heavy in fact, and the Gardenias will not root into it.

The square pits formed with loose bricks above alluded to are to be recommended for many plants beside Gardenias, notably strong roof plants of Allamandas, Bougainvilleas, Clerodendrons, Stephanotises, as well as Bananas, Tree Ferns, Palms, and other strong-growing plants. They are very easily constructed, and though only one brick thick, it is surprising how firm and steady their own weight keeps them. Then they can be pulled to pieces for the purpose of giving the plants a shift, the pit in this case being enlarged according to the requirements of the plant. Or again, much of the exhausted soil, or it may be sour unoccupied soil, can easily be removed, the walls rebuilt, and roots replaced in suitable fresh compost. In every case the work can be done easily, and without incurring a risk of injury to a valuable plant. Then if there is any doubt as to the amount of water a plant requires a few bricks can be taken off and returned after the soil has been examined. It is surprising what an amount of root-room a small pit—say three bricks square and five or six bricks deep, will afford, and the plants I find do well in them.—W. IGGULDEN.

INJURIOUS INSECTS.

THE eighth *Report of Observations of Injurious Insects*, by Miss Eleanor A. Ormerod, has just been issued (London: Simpkin, Marshall, & Co.), and in the 120 pages devoted to the subject a large amount of useful and practical information with regard to the most troublesome insects in gardens and farms. Some pests were especially abundant during 1884, and some long reports concerning their devastations and the preventive measures adopted are furnished, concerning which a few extracts may be given.

DADDY LONGLEGS (*Tipula oleracea*).—This was one of the most destructive of all, and referring to it Miss Ormerod remarks:—"1884 has been marked by severe attack of grubs of the daddy longlegs. The large number of the flies which had been noticeable in many localities in the previous autumn gave sign of what was to be expected, and the steady course in which the attack came on is worth notice, as this is one of the kinds of attack in which (unless measures are taken to obviate it) the presence of the injurious insect may be pretty surely foretold.

"With such of our crop insects as hibernate—that is, pass the winter in a torpid condition—a mild or variable winter may be rather a means of destroying them than otherwise, for the warmth brings them out from their shelters, as we see with Turnip fly on a sunny day in late winter, and many are taken by birds or nipped by the return of night frosts before they can shelter again; but it is different with those that live (and feed, weather permitting) below the surface.

"The mild weather keeps both the plant and ground in a condition which suits them, and though we cannot say that the cold kills them, as the daddy longlegs grubs will stand being frozen without hurt, still for the time being frost 'firms' the surface as effectually as the roller, and with such grubs as go down deep in frost, and do not come up again directly it is gone from the surface, the crop gets a little respite.

"Last winter (1883-84) it will be seen from the observations that the grubs were advanced enough in growth to sweep off autumn-sown Wheat in December, and they continued actively at work through the winter; damage continued to be reported through the season, until in autumn specimens of chrysalids sent in showed that the autumn flight of the daddy longlegs flies was soon coming to set up attack for 1885.

"As usual some of the worst attack was on crops after broken-up Grass or Clover; it was also reported from the peaty soil of the Lincolnshire Carrs, and from low-lying land near a river, about 3 feet above the water level. The grubs were found in injurious numbers in rotting turf, also sheltered beneath turfs and under clods, which gives a hint where to search for them in hand-picking, besides directly amongst the crop.

"Amongst direct remedies noted hand-picking was found serviceable, likewise hoeing, which was noticed to cut through many of the grubs; but rolling did not answer with any certainty. Amongst the applications to help the crop over attack, nitrate of soda appears to have answered much the best, and the careful experiments of Mr. Ralph Lowe show that this chemical has an immediately injurious effect on the grub, besides having the good fertilising effect on the crop which we are aware of. The non-effect of other chemicals, and the amount of weight bearable by the grub, shown by Mr. Lowe's experiment, are also serviceable practically."

The experiments mentioned were as follows:—"On the 1st of June Mr. Ralph Lowe, writing from Sleaford, Lincolnshire, reported that the enormous numbers of daddy longlegs observed in 1883 were producing the result to be expected. The larva had for some months made havoc with Wheat and Barley; at the date of writing many fields of Beans were suffering from its ravages; and in gardens the Scarlet Runners and Peas had been injured. Details of attack are given on a field at Ewerby:—"A 16-acre piece of Clover had been manured with farmyard manure, half with manure made in 1882, laid on in March (1883); the field was mowed for fodder, and the eddish eaten with sheep. The other half of the field was then manured with fresh-made manure, ploughed once, and drilled with Barley. Patches came up irregularly, and these patches became larger, and soon were quite

bare; and it was found that great quantities of what were called 'black worms' or leather-skings [*i.e.*, daddy longleg grubs, Ed.] were destroying the plant upon the part manured with the old manure.

"The worst parts were harrowed, and rolled with heavy rollers repeatedly, getting a good tilth. It was drilled again with Barley, which fared nearly the same as before; the grubs ate the young shoot, and then the grain itself. I found great quantities of the larvæ of the daddy long-legs, some fully grown, others half half that size, under the furrow, where they were quite secure from the effects of the heaviest roller."

"From these Mr. Lowe selected a number for the following experiments, with a view of ascertaining whether the various applications were of service beyond stimulating the crop to a more rapid growth. A few of the grubs were covered respectively with quicklime, soot, household salt, and superphosphate. These were secured, as they crawled away from the applications, for further investigation. Others were placed in earth mixed with one-fourth of white arsenic; and in twelve hours only those which had been in the arsenic appeared at all the worse, and even these recovered before the following day. [Some of the grubs that had been covered respectively with salt, quicklime, and soot were placed in bottles with partially rotted leaves and sprouted grain, and were developed in due course to flies.] Brine was tried at a strength of 1 lb. of salt to a quart of water, and the grubs dropped into it died in a short time; those on which the brine was merely poured were none the worse. Nitrate of soda, however, gave different results. The grubs that were placed in it were apparently dead in three hours.

"Mixing nitrate of soda with a considerable quantity of earth had the same effect; the grubs were to all appearance killed pretty quickly, both large and small ones.' Likewise, 'A weak solution of nitrate of soda poured upon soil containing a large quantity of the grubs, likewise to all appearance killed the whole of them.'

"Mr. Lowe observes:—'So far I think that where the larva of the daddy longlegs are suspected, it would certainly give good results (for roots) to mix nitrate of soda with farmyard manure, turning twice.' Later in the year Mr. Lowe went over his experiments again, and verified the point that salt, lime, soot, and superphosphate did not inconvenience them; but with regard to those treated with nitrate of soda, though they appeared to be dead, yet placed in damp soil they recovered, and in a few days were as vigorous as the others. From this second experiment it is open to doubt whether the grubs which appeared dead after treatment were so or not; but, looking at Mr. Lowe's note that those which recovered did so 'after being placed in damp soil,' I certainly think that his experiment greatly confirms the value of nitrate of soda as a direct deterrent to the grub, as well as stimulant to the crop. It is shown that the presence of this application, whether mixed with the soil or in solution as a watering, has a direct ill-effect on the grub (which I can confirm from having seen it void its contents when dropped into the nitrate); and here, I think, we may rest on three useful points. The nitrate is beneficial to the plant; it is also hurtful to the grub; and, even if it only makes the soil affected distasteful, we get benefit by driving the creatures partially away.

"Further, Mr. Lowe, to try the effect in ordinary circumstances, filled pots with earth, and, having placed grubs at a depth of within 1 inch of the surface, these pots were respectively covered with an amount of salt representing 1 ton per acre, lime 3 tons per acre, and nitrate of soda 2 cwt. per acre. These were watered with rain water until the soil was well saturated, and 'the effect in salt and lime was not perceptible. The grubs treated with the nitrate of soda were very relaxed, soft, and helpless—'will probably die;' and eight days after Mr. Lowe wrote that they still continued limp and helpless. With regard to amount of weight that could be borne by these grubs, Mr. Lowe placed some of them in a box of moderately damp soil, about 1 inch from the surface, and applied a pressure of 2½ cwt. for five minutes. The soil was pressed very close, and the grubs, on being exposed to the air, soon recovered. Repeating the experiment for the same length of time—that is, five minutes—with the lesser weight of 2 cwt., but leaving the grubs in the compressed soil, it was found that forty-eight hours afterwards none of them had moved, and Mr. Lowe considered they would not have moved, but died where they had been pressed down. The above experiments appear to me of much value in confirming or showing the method of action of two of the accepted methods of lessening the ravage of daddy longlegs grubs."

Attention is also given to the Gooseberry and Currant sawfly, Hop aphid, Mangold and Beet fly, Onion fly, wireworms, Turnip fly, the Willow beetle, and many others, most of which are accompanied by illustrations of the insects in several stages.



KITCHEN GARDEN.

Thinning Young Vegetables.—Do not neglect this, as nothing tends so much to destroy the prospects of a good crop as allowing the plants to become too crowded in the rows or beds while young. Turnips, Parsnips, &c., should be thinned before the plants are many inches high, first thinning to 3 inches apart, again to 6 inches, and finally to 10 inches or 1 foot for Turnips, and more than this may be given the Parsnips. Radishes very seldom "bulb" well, when the plants are growing so closely together that they crowd each other from the time they come through the soil. A much better crop is secured when they are all thinned to 2 inches apart. In the case of Lettuces, Cabbages, and Greens generally it is a good plan to thin out the thickest parts before the plants become any size, and if the thinnings are too small to be dibbled in elsewhere throw

them away. It is much better to do this than have the whole crop spoiled.

Tomatoes.—Early plants are now fruiting very freely. Cut the fruit off as soon as it is coloured. If it is not required on the day it is cut it will keep very well for a long time, and by taking it off the later fruits will have a better chance of swelling. Supply fruiting plants with abundance of liquid manure, and on no account allow the growths to become crowded. Place plants intended for open-air culture in cool quarters. Where there is a deficiency of plants take cuttings from the early plants and root them. These will become large and fruitful long before seedlings.

Celery Trenches.—They should be prepared. Select an open sunny piece of ground for them where the soil is not too stiff; but it may be very poor, as the richness should only be in the bottom of the trenches, and we prefer the sides and the soil we use for earthing up to remain poor. It answers the purpose well enough for blanching, and is generally free from worms. Make the trenches from 2 feet to 4 feet wide, to hold from two to four rows. From 6 to 10 inches is a good depth for them. Put the soil up in neat ridges between the trenches, and plant up the tops at once with Lettuce or sow with Spinach.

Planting Celery.—The earliest-raised plants may now be put into the trenches. Dig a large quantity of manure into the bottom first, then lift the plants with as large balls of soil attached to the roots as can possibly be secured, and plant them in this condition. Set them well into the soil, and water thoroughly immediately planting is finished. Late plants now in their seed quarters should be placed 2 or 3 inches apart in frames or boxes of rich soil. Hotbeds are not required to raise or push them on now. A cool frame or the protection of a handlight will suit them admirably. Never allow them to become dry at the roots, and ventilate freely. As our early frame Potatoes are dug we level down the soil and plant again with Celery, and the young plants always turn well out of such places.

Lettuces.—Transplant a large batch of these from the seed rows. Give them a cool rich soil, as they will be heading at a time the hot weather is very trying for them. Sow a pinch of seed about once a fortnight during the summer. Small batches are the most satisfactory from June until September.

Beet.—The main crop of this should be sown. Dell's Crimson is a fine variety, being of good colour and not too large, which are the two main points in a good Beet. Sow in rows 15 inches apart, and in soil where the roots can run freely down without meeting with anything to cause them to fork. Rough manure is the worst for this.

Rhubarb.—This is now plentiful, but if the stems are drawn away too freely the roots will be checked, and they will fail to produce good sticks for some time. Weak plants will be much benefited by liquid manure. All flower stems should be cut off as soon as they appear. Do not gather from young seedling plants until they have produced a good quantity of large leaves and strong stems.

Horseradish.—Where new plantations of this were formed in the spring the stems may not have been put deep enough in the ground, and part of them may be visible now; but they will not succeed very well if this is the case, and the rows should be earthed up, drawing the soil well over the crowns and covering them completely.

Globe Artichokes.—Where these are producing small heads cut them off, and allow the strong growths which are forming now to produce the crop. They delight in a rich soil, and a large quantity of good manure should be placed round the collar of each plant.

Cabbage.—These are now turning in well, and are very acceptable. They should never be cut lower than is necessary to secure the head, as the stems if left will soon produce many valuable sprouts. Those which are running to flower, however, are of no use for this purpose, and they should be rooted out, their places being filled with young plants. Sow a little more seed to produce plants for heading in the latter part of the summer. Transplant spring-sown plants as soon as they can be handled.

Brussels Sprouts.—The earliest of these should be planted in their bearing quarters. A rich deep soil is required to grow them to perfection. These should be 2 feet from row to row and 18 inches from plant to plant. Lift them with good roots, and water after planting if the weather is very dry.

Leeks.—The most forward of these should be planted. There is no doubt about their requiring a rich soil. The old-fashioned plan of making very wide holes with a thick blunt-pointed dibble, putting a plant into each hole and dropping a little soil down on the roots, is a first-rate way of treating them.

Autumn-sown Onions.—These will soon be wanted for use, and growth should be pushed on rapidly. Whenever it rains mix a quantity of soot and guano and sprinkle this all over the plants. When it is washed down to the roots it will improve growth wonderfully. Do not draw up any which have "bolted," but let them grow on for a time, and they may then be taken up for use. Complete the sowing of all Broccoli, Savoys, Herbs, Asparagus, and vegetables generally.

FRUIT FORCING.

FIGS.—Early-forced Trees in Pots.—The fruit is now ripening very fast, and on this account reduce the supply of moisture but increase the ventilation. Great care and judgment will have to be exercised in the management of the trees, as they are carrying fruit in every stage of growth the daily routine must meet the wants of the succession as well as the ripening crop. The pots being surrounded with a mass of new roots will require plentiful supplies of warm water; the surface of the plunging material and lower parts of the trees may be regularly syringed, and the whole of the trees well washed immediately after the ripe fruit has been

closely gathered. The occasional washing improves the health of the trees, keeps them free from red spider, and at the same time keeps the succession crop moving forward. Fire heat is, of course, necessary, and a few of the strongest laterals require stopping and tying, as fine Figs cannot be had without a free circulation of warm air and exposure to sun and light.

Succession Houses.—Although the nights have been cold the days of late have been bright, and under these favourable conditions succession crops have made rapid progress. If not already stopped and tied down no time should be lost in getting this done, as the fruit in the earliest house of planted-out trees will soon begin to show signs of swelling for ripening, and if, as is often the case, the trees have set a very heavy crop a general thinning should be made as the work proceeds. It is a great mistake to overload Fig trees with fruit, and yet we often see the Fig overcropped with the result of loss of quality, and very often the loss of the entire crop of fruit. The general routine in succession houses is good root-feeding with tepid liquid manure or clean water through a heavy mulching of manure, plenty of heat, air, and a good syringing twice a day, the first time when the temperature is rising and again in the afternoon after closing.

Trees in Pots for Next Year's Fruiting.—Get the trees well advanced in order that they may have a long and complete rest before they are wanted. Do not aim at large trees, which is sometimes sought by constant stopping and feeding young plants, keeping them growing for a considerable time, by which means large trees are soon had; but mere size is no criterion of fruitfulness, therefore have a small tree thoroughly ripened and rested as the most prolific and serviceable.

VINES.—Early Houses.—Grapes now ripening will require moderate fire heat to maintain a circulation of dry warm air by day, and a temperature of 60° at night. Avoid excessive dryness, as early Grapes with ventilation require more water than late ones, and it is important that the foliage be kept clean and healthy as long as possible, or the loss of foliage may cause the Vines to start into growth when they should be resting. Gradually remove the remains of fermenting materials from outside borders, leaving a good mulching of the best material for the protection of the surface roots, and allow them to have the benefit of exposure to summer rains, which will wash in the fertilising properties of the manure and stimulate the Vines to the production of new laterals after they are relieved of the crop.

In mid-season and autumn houses, Muscats where carefully fertilised have set as freely as Black Hamburgs, and will require careful thinning as soon as the properly fertilised berries take the lead. If a large percentage of the surplus bunches were not cut off before the flowers opened lose no time in removing them, and laterals which have been allowed to ramble may be stopped, tied, and regulated in accordance with the uncovered space at command. Give inside borders a thorough soaking with tepid liquid manure or of clear water through a good mulching. Admit air in the early part of the day, increasing it with the sun heat, and close early in the afternoon, so as to raise to 85°, and well damp all available surfaces at the same time. Admit a little air at the top of the house before nightfall, which may remain through the night, and will be conducive to rest by insuring a comparatively low temperature of 60 to 65°, and be a means of preventing scorching the following day, which is more due to neglect of early ventilation than any other cause.

Late Houses.—Vines in all stages have grown rapidly of late, and under the influence of solar heat the Vines which started weakly have regained their usual vigour. The weak break may have been a consequence of the dryness of last season, but there are complaints of a tendency to the production of tendrils or loose bunches—a certain indication of immature wood. In some instances the show of fruit is not so numerous as usual, but the bunches are very compact, and it is this description that are the most covetable when they are required for keeping to a late period. In the case of Vines of which the bunches have a tendency to run into tendrils the houses should be started earlier, and have fire heat in autumn, so as to thoroughly ripen the growth. At present the only corrective, and it is not always effectual, is to stop the shoots to three or four joints of the fruit and to tie them down to the trellis, choosing the latter part of a fine day, as the growths are then limp, keeping the atmosphere rather drier. Sufficient artificial heat will be necessary to maintain a night temperature of 60°, making the most of solar heat by early closing, but ventilating early as a preventive of scorching, and in order to secure a short-jointed thoroughly solidified growth.

If late spring planting is contemplated no time should be lost in getting it done, and although large-growing plants may be transferred from pots or turves to inside borders at any time with every prospect of doing well, there is no disputing the advantage of early planting, as Grapes cannot be expected from badly ripened wood, and half-ripened canes when cut down do not afford such clean short-jointed growths next season as those that have been properly ripened and rested through the autumn and winter. Every encouragement should be given pot Vines intended for fruiting next season, keeping them well up to the light, a firm growth being secured by free ventilation.

PLANT HOUSES.

Poinsettias.—Cuttings will be nearly ready for taking from the old stools for the early plants, but nothing is gained but tall plants by propagating early; the main stock should not be inserted until next month. If the cuttings have been forced in brisk heat, which is generally the case, remove them to a cooler and more airy house for a week to harden. When this precaution is taken the cuttings root with certainty, which is not always the case if taken from plants in strong heat. Insert the cuttings

singly in small pots of sandy soil, and after water has been supplied plunge them in the propagating frame or under a handglass, and keep them until rooted in a temperature ranging from 65° to 70°. Shade the cuttings until rooted.

Euphorbias.—The well-known *E. jacquiniæflora*, with its bright scarlet flowers, is so useful during winter, that where effective arrangements are required it should be grown in quantity in from 3 to 5-inch pots. Its lasting properties while in flower are considerable, especially in a temperature that is not allowed to fall below 45°. The stock plants will by this time have a number of suitable shoots. Allow the plants to get somewhat drier at their roots, and remove them to the greenhouse for about a fortnight, keeping them moderately dry. Take the cuttings where they join the old wood, and insert them together in sand, covering with bellglasses. If this is done no difficulty will be experienced in striking this useful plant, for not one in fifty will fail to root; but if taken from the plants while in heat and inserted, probably not one in that number will form roots. As soon as the cuttings are rooted they should be potted singly before their roots become matted in a compost of loam, one-seventh of manure, and sand. After the insertion of the cuttings return the old plants to their former position in heat until another batch of cuttings is ready.

Plumbago rosea.—The variety known as *P. coccinea superba* is much the brightest in colour, and decidedly the best, but grows taller than *P. rosea*, therefore both should be grown. Good cuttings will now be plentiful, which is not the case early in the season, for most of the shoots that are produced after the plants are pruned terminate with flowers. These, if taken off and rooted, often do not grow with the same freedom as those taken later in the season. The cuttings root freely in sandy soil, and may be inserted singly in the centre of small pots, then no check is given afterwards in potting them. Supply water after insertion, place them in the propagating frame, and keep them shaded from the sun until rooted.

Linum trigynum.—This is a very useful decorative plant, but of no use for cutting, but when arranged in association with *Plumbago rosea* the effect is very striking. Yellow at that season of the year is scarce, therefore this free-flowering old plant cannot well be dispensed with. Cuttings will root freely under the conditions advised for *Plumbago rosea*. See that the cuttings are clean before inserting them, for this plant is much subject to red spider.

Sericographis Ghiesbreghtiana.—Cuttings of this early winter-flowering plant root freely if inserted singly in small pots of sandy soil, and kept in the close propagating frame. Libonias are very useful decorative plants when well grown and flowered. A batch of cuttings may be inserted in sandy soil in 5-inch pots, and will root freely treated like the above. Pot the cuttings directly they are rooted, and then grow them on as rapidly as possible in heat until they are placed in the pots in which they are intended to flower.

Centropogon Lucyanus.—This is probably the best winter-flowering plant that we possess, for it can be had in bloom from November until the present time. Early in the season the flowers are produced from the termination of the shoots, and afterwards from the axils of the leaves all along the stem in succession. It is valuable in either the conservatory, intermediate structure, or the stove, and will render gay any of these houses long after all other autumn and winter-flowering plants are past. Cuttings root freely in sandy soil at this season of the year if kept close and shaded. A few may be rooted annually for flowering in small pots, but the majority of our stock consists of the plants rooted last year, which we prefer to raising the whole stock annually by cuttings. The old plants when they have made a few inches of growth above the surface of the soil are turned out of their pots, and the roots partially reduced, then potted again into the same size, 6-inch. The same compost should be used as recommended for *Euphorbias*.

THE FLOWER GARDEN AND PLEASURE GROUND.

Violets.—To be profitable those of the Czar type must be frequently transplanted, and the present is the best time for doing this work. Where they are allowed to remain undisturbed for several seasons the crowns become much too thick and weakly, and as a consequence the plants are more liable to be damaged by frosts or damp, the blooms that are produced being usually puny. On many rather light soils they may well remain undisturbed for two seasons, but on strong heavy land they should be replanted every spring. In the former case preference should be given to rather cool though not heavily shaded positions, while on heavy land they succeed best in open spots. The soil for them must be enriched, deeply dug, and afterwards made rather firm again. Lift a number of old plants, divide into single crowns, trimming off all runners, and at once dibble them in firmly where they are to bloom. Nothing is gained by crowding, and the plants may well be disposed 12 inches apart each way. If the ground is at all dry they should be watered in, and during hot and dry weather they will be benefited by occasional watering and a mulching with short manure or leaf soil.

Wallflowers and other Perennials.—These are generally sown too late in the season, and as a consequence the plants do not attain half the size they would otherwise do, neither are they so hardy and floriferous as those raised early. No time should be lost in sowing the seeds of Wallflowers, such as *Belvoir Castle*, yellow; *Veitch's Blood Red*, and the double German; *Sweet Williams*, both double and single; *Brompton*, *Queen and Emperor Stocks*, and *Forget-me-nots*, of which the two best for bedding are *Myosotis dissitiflora* and *M. dissitiflora alba*. Select a warm border, fork a little leaf soil or other light material into the surface

damp the surface if at all dry, sow the seed thinly either in drills or broadcast, and cover with a little fine soil. Protect the seedlings from slugs, and prick them out early in July. Campanulas or Canterbury Bells should also be sown now, the choicer kinds preferably in pans or boxes of fine soil, and protected with glass. Later on the seedlings may be grown in an open border, and any required for pot culture be lifted before frosts are experienced.

Carnations and Picotees.—These are extremely useful border plants, and a packet of seed will yield a great number of good varieties; and even the single sorts, of which a few are almost certain to be included, find many admirers, especially in a cut state. Strong seedling plants are usually wonderfully floriferous, so much so that in about two seasons they are exhausted. It is advisable to raise a batch of plants every spring, and the sooner the seed is sown the better the prospect of ultimate success. We usually order the finest mixed of both Carnations and Picotees, and also a packet of Carnation Grenadin, this being a brilliant scarlet variety, very compact and free flowering. Sow the seed in boxes of fine loamy soil, and stand in a cool or only moderately warm frame. If shaded from bright sunshine and kept uniformly moist the seed is not long in germinating, the seedlings when in rough leaf being first pricked off in boxes of good soil, and eventually planted out where they are to bloom, which they will do the following summer. Pinks, including the popular Mrs. Sinkins, may also be raised in a similar manner.

Ornamental Grasses.—When well grown and properly dried these Grasses are of great service in the decoration of rooms and for mixing with cut flowers during the winter months. They are also very pretty in a growing state. The seed may be sown thinly in patches where the plants are to grow, but in cold late localities it should be sown under glass, and about the present time in either case. Crowding must be avoided, or the produce will be very inferior. The sorts can either be had separately or in packets of twelve or twenty-four varieties. Vendors rarely, if ever, state the respective heights of the various sorts, the purchasers, therefore, frequently being puzzled as to the positions each should have, the result being that many of the tallest growers are placed in the front rows, and *vice versa*. For the guidance of the growers we will give the average heights of the principal sorts—*Agrostis argentea*, 1½ foot; *A. laxiflora*, 1 foot; *A. nebulosa*, 1½ foot; *A. pulchella*, 1 foot; *Andropogon giganteus*, 5 feet; *Anthoxanthum gracile*, 1½ foot; *Arundo conspicua*, 8 feet, growth and plumes somewhat similar to *Gynerium argenteum* (Pampas Grass); *Brachypodium distachyum*, 2 feet; *Briza maxima*, 2 feet; *B. minima*, 1 foot; *Bromus brizæformis*; *Chloris radiata*, 1 foot; *Chrysurus cynosuroides*, *Coix lachryma*, 1¼ foot; *Eleusine indica*, 1 foot; *Eragrostis elegans*, 1 foot; *Erianthus Ravennæ*, 7 feet; *Hordeum jubatum*, 1½ foot; *Lagurus ovatus*, 1 foot; *Panicum plicatum*, 2 feet; *Paspalum elegans*, 1½ foot; *Pennisetum longistylum*, 1 foot; *Stipa pennata*, 2 feet; and *Setaria macrochaeta*, 1½ foot.

Border Annuals.—Now that the weather has become more favourable no time should be lost in sowing seeds of such annuals as *Clakias*, *Collinsias*, *Larkspurs*, *Tropæolums*, *Mignonette*, *Love-lies-Bleeding*, *Poppies*, *Sweet Peas*, *Coreopsis*, *Linums*, *Convolvuluses*, *Scabious*, *Virginian Stocks*, *Cornflowers*, *Marigolds*, *Hibiscuses*, *Eschscholtzias*, *Nemophilas*, *Godetias*, &c. The soil should be well broken up, the surface of the small patches levelled with the hand and lightly watered if at all dry, the seed then being sown very thinly, and only lightly covered with fine soil. Each patch should be marked with a peg or label, and as the seedlings appear look closely after the slugs or they will quickly clear them off. It may be necessary to trap the slugs either under heaps of Broccoli or Cabbage leaves, or on little heaps of bran, this rendering their destruction a simple matter. When the seedlings are of good size they must be freely thinned out, as if they are thick on the ground the flowers are certain to be small and the display of short duration.

THE BEE-KEEPER.

SEASONABLE NOTES ON BEES.

THE season is undoubtedly a backward one, and so much the better for our chances of success both with the fruit and honey harvests. The cold east winds and night frosts have retarded the opening of the buds on shrubs and trees, and we may hope that as the days grow longer and the sun obtains more power there will be less occasion to fear the blighting of fruit blooms and of fruit-growers' hopes. Bees steal out on sunny days and collect pollen and water, but so far the flowers can secrete little honey, and careful systematic feeding should be carried on by the bee-keeper. Let the bees themselves be uncovered and disturbed as little as possible. When necessary to ascertain the condition of a stock, either as to its progress or to see that there is a sufficiency of food, let the work be done as expeditiously as possible, and towards the close of a warm day.

We are now reaping the benefit of having planted for our bees both flowers and shrubs. Some stout Willow poles

driven into the ground round a pond three years ago have proved a constant source of pollen supply. If the sun gleams out for a few minutes only there is a joyful hum in the air, and the Willows become alive with our little workers. During the latter part of March and up to the present time we consider that the Willow blossom has yielded more pollen than any other trees or shrubs in our neighbourhood. Arabis, Primroses and Polyanthus, Anemones, Periwinkle, Wall-flowers, and Dandelions are now in perfection, but the Ribes is at the present time the favourite shrub. We have quantities planted, and they are now masses of blossoms, and the bees certainly do not fail to "improve each shining hour" among the gay pink trusses. Gooseberries will soon be open, and will take the place of the Ribes as the latter fades. Black and Red Currants will also soon be producing their pendent flowers, and the Apple trees promise a glorious display. Pears and Apples are studded with fat blossom buds, the result of the well-ripened wood of our last almost tropical summer. Like ourselves, most growers must have noticed the quantity of flowering shoots produced by last season's growth. The new wood on three out of four trees is laden with bloom. All these glorious feasts will soon be spread out for the benefit of bees and bee-master, and should the weather be favourable for the setting of the fruit we may look for a profitable harvest. Plum blossoms are expanded, and many Pears. Since penning the first part of this letter the Gooseberries have come into flower, and to-day they are special favourites with the bees. A few days of such weather as this will powerfully strengthen our hives. Through having a gentle but constant supply of food and water our bees have been quietly augmenting in numbers, and this warm day brings out the young bees in their thousands.

We shall now give our attention to spreading the brood more confidently than we could have done during the cold east winds. It is marvellous to watch the effect of this operation when judiciously carried out. We first unseal the capped honey cells around the brood nest, and when these have been appropriated by the queen we insert one of the outer combs in which there is brood into the centre of the cluster, and in this way as the bees increase in numbers and the weather permits we gradually expand the nest until the hive is one mass of brood from end to end. This should bring us within measurable distance of the first great flow of honey, and since there will be little storage room in the body of the hive, supers will be readily taken possession of. Everything now in an apiary, if not already prepared, should be at once got into a state of readiness. The swarming season will soon be upon us; it is wonderful how fast bees properly cared for up to this time increase daily. The bee-keeper should soon after a careful survey of his stocks make up his mind what system he means to carry out with each particular colony. He should at any rate set aside one, and that the best hive, for queen-raising. Some, if he wishes for increase of number, will be treated on the swarming system; others may be entirely given up to the produce of extracted honey, while others will be worked to supply sectional supers. This brings us to say a word about section racks. There are many kinds in the market. We find that the best in practice are those which are in three separate pieces, each to hold seven 1 lb. sections. We like dividers made of very thin wood in preference either to glass or tin. The kind of wood referred to is such as is used for handboxes and other like boxes used by milliners and drapers. Those living near a saw-mill could get a 3-inch plank sawn up into enough sheets to last a lifetime for a small charge. We have recommended the section rack in three divisions for several reasons. Not nearly so much heat is lost when withdrawing sections if only one-third of the surface is opened at one time. Each division can be lifted off bodily and a quilt put in its place, while the sections are removed and renewed, and scarcely any heat will be lost. They are much more easily managed by beginners or timorous people than where the bees have access to the whole box of sections at once. But

whatever kind of racks or supers are to be used all should now be got ready, for the secret of success in bee-keeping depends upon doing everything at the right moment, foresight as to requirements, and promptitude in using them.—P. H. P.

THE BRITISH HONEY COMPANY.

THE first general meeting of the shareholders of the above Company was held at 105, Jermyn Street, S.W., at 4 P.M., the Rev. H. A. Peel in the chair.

The Chairman moved that the report and accounts be passed. This was seconded by the Rev. J. T. Scott, and carried. The report of the Directors showed that 5476 shares had already been allotted, and that the shares had been taken up by persons of all classes, from the capitalist to the cottager, showing conclusively that the formation of the Honey Company met a long-felt want—viz., a ready and reliable wholesale market for honey. It stated that premises had been secured on most favourable terms at Columbia Market through the generous aid of the Baroness Burdett-Coutts, who have already evinced so much interest in the promotion of the honey industry in the United Kingdom. The statement of the accounts showed that £127 had been expended in printing, rent, trade mark expenses, &c., and that the Directors proposed an outlay of £167 for the necessary plant for carrying on the business.

The Chairman gave a short history of the reasons why the Company was formed, pointing out that the B.B.K.A. did not feel itself justified in undertaking the work of buying and selling honey, as it was a purely philanthropic Association, and that for many years the Committee had tried in vain to arrange some plan by which the British bee-keeper might be able to dispose of his surplus honey. Private enterprize and honey fairs had alike failed, and as an instance he mentioned that some hundredweights of honey had been offered to the Company from Lincolnshire, showing that the Grantham honey fair had failed in disposing of the honey gathered in its own county. He was fully confident of the success of the Company, both as regarded the producer and consumer; the former would be able to obtain the full market price for his honey, and the Company would pay him prompt cash, while the latter would get pure honey, and not a compound made out of old pawn tickets and sulphuric acid. In answer to the Baroness Burdett-Coutts, who wished to know why the Directors had decided to allow bee-keepers to pay for their shares in honey, the Chairman pointed out that those who would rather not receive money for their honey might be able to show their interest in a Company which existed for their benefit by taking shares instead of their value in money.

Mr. Stewart said that the chief object of the honey fairs seemed to be the keeping up of an artificial value for honey, and that the expenses incurred in carriage, &c., with the chance of the honey not being sold after all, prevented many bee-keepers from sending their honey.

Dr. George Walker said that it was impossible to say what the price of honey would be, but he thought that 6d. per lb. would be about the average price for the next year or two. It had been brought as an accusation against the Company that it was going to act as a middleman or merchant, but he failed to see how the public could do without middlemen. The experiment had been tried in the foreign trade, but had resulted in failure.

Mr. Cowan thought that the Directors were justified in taking full powers to sell pure foreign honey if necessary, but they had no intention of doing so at present, unless the honey harvest of Great Britain was not sufficient to supply the demand.

The Baroness Burdett-Coutts was surprised that there should have been any opposition to this Company, which was to a great extent philanthropic, though she was glad to see that the commercial element had not been lost sight of, which was a sure guarantee of its success. She mentioned that there was a bill now before Parliament to bring a railway right into Columbia Market, which, when passed, would much lessen the cost of carriage, and in conclusion she said that Mr. Harrison, the Superintendent at Columbia Market, would render every assistance to the Company.

The Chairman in reply said that the Company had been most courteously treated by Mr. Harrison, who was a very able man, and the Company must express its deep sense of the obligations they were under to the Baroness Burdett-Coutts. A cordial vote of thanks to the Chairman and Directors was passed, and the proceedings closed.

THE HONEY COMPANY.

"A HALLAMSHIRE BEE-KEEPER" states that he prefers facts and not assertions, but when he talks of a multitude of sellers and only one buyer, it appears that he rather prefers false assertions to either, as he must know that there are scores of buyers of honey both wholesale and retail. No doubt he possesses a monopoly of business capacity, but having shown his letter to a merchant of some fifty years' experience, it may interest him to know that the criticism of his letter was concise, though not complimentary, consisting of one word—ridiculous. Before accusing the directors of a want of business capacity, it would have been well if he had referred to Mr. Lyon's letter on page 384 of the *Bee Journal*, in which he says that he had received scores of letters from bee-keepers who wanted to know if he would take some cwts. at the same price they had retailed it per lb. in their immediate neighbourhood. It was in order to prevent any misconception on this point that the editor wrote as he did. There is an old proverb, "Let the buyer beware," but it seems now that it ought to be changed into, "Let the seller beware." It has always been supposed to be a difficult matter to get the better of my fellow countrymen the Scotch, Yorkshiremen, or Jews, but for the future the second on this list will have to be left out. Suppose, for instance, that I offer to give 1s. per dozen for glaziers' diamonds, say in Sheffield, the philanthropic manufacturer would, of course, refuse to take more than 6d. per dozen, for fear lest I should not be able to make a proper profit.

Surely when I was offered the honey it was not my business either to

introduce the seller to a beneficent potter who would do the business for him at half per cent, or to a confiding banker, who would promptly advance him 8d. per lb., of course without any interest, till the honey was sold, for the simple reason that I do not know, though I shall be very happy to learn, where these wonderful men are to be found. The reference to America is peculiarly unfortunate, as that country is suffering heavily from their ridiculous protection tariffs, and the general public there are beginning to find out at last that the upshot is to take their money and put it into the pockets of the manufacturers of protected articles.

It is open to anyone who can prove that the Honey Company are selling glucose or foreign honey as pure British honey to prosecute the directors for fraud. Personally I like to pay all my debts, even for advertising, and have no wish to appear as a defendant in a county or any other court of law, and as a certain amount of the analysis of the honey offered to the Company will fall to my share, the public may be confident that, as far as I am concerned, I shall not palm off glucose as pure British honey, nor will any other director.—GEORGE WALKER.

VARIETIES OF HONEY BEES.

IN giving my conclusions upon the above subject, conclusions formed from continued careful experiment with German and Italian bees of the various strains, and observation and conversation with friends who have experimented with Cyprians, Syrians, and Carniolans, I believe that all these so-called races should properly be divided into two—the brown and yellow bees—of which the Italian and German represent the best of the two classes. Great radical differences in points of character are not found between Cyprians and Syrians, or Germans and Carniolans, but between the brown and yellow bees, of whatever name they may be called. Now, if one race or the other possessed all points of superiority and the other none of them, any discussion regarding "best bees" would be a thing of the past; but as it is a fact that points of superiority and inferiority are about balanced between the races, it leaves a wide field in which the apiarist may well use his judgment and tact. All practical honey producers will admit that the following points of differentiation between the two races not only illustrate more radical differences, but points of more importance.

Let us mention of the yellow bees the following valuable points of superiority.

1, Protection of their home against enemies. This characteristic is of greater value to the novice than the specialist.

2, As a rule they have a longer proboscis. This point is of advantage in such locations as at certain times of the year abound with flowers which have many nectaries too deep for honey bees.

While it is more or less correct to say that the Italians stick better to their combs, are more courageous, will remain in any new location better, are less liable to quarrel when different colonies are united, though fiercer in disposition, are less liable to sting, because they are less liable to take wing, that the queen is more readily found, &c. All these are minor points, and even the second can hardly be called a major point.

Now, let us see about the brown German bees. 1, They are superior comb-builders, making wax more readily, of better colour, capping over their combs quicker and whiter, leaving a space between the honey surface and cap, which not only much improves the appearance but enhances the price 2 or 3 cents per lb., securing a more ready sale with that advance, and enables the honey to bear a humid atmosphere for a considerable time without any material deterioration.

The foregoing was of not so much importance twelve and fifteen years ago, when the honey supply was unequal to the demand, and buyers came hundreds of miles to secure our crop—let it look as it might, if it was only "honey;" but in these days it is to me the most important point of superiority to be found with any race of bees.

2, They are much less inclined to swarm. This is an important trait, especially to the larger special producer; also to any who cannot give their apiaries close attention, either because they have too many apiaries for the help employed, or too few colonies in one apiary to afford them continual attention.

Minor points of superiority are that they build the most worker comb and straighter (some may wonder why I call straight worker comb-building a minor point; because of the otherwise, wise and general use of full sheets of comb foundation, but in cases where such are not used this trait of the brown German bees is a major point, greatly in their favour), enter surplus receptacles more readily, in cases where the apiarist has bad communications thereto, are more easily shaken from the combs (sometimes an advantage and sometimes not), and are more sensibly affected by the loss of the queen. This aids us in many manipulations.

When swarming these bees alight sooner and with more certainty than Italians; a swarm hives more readily, they can be driven more easily, heeding the admonitions of the smoker more promptly, &c.

I do not doubt the wisdom of choosing the pure Italian bees by those who live in the south and make extracted honey a speciality; but for those who live in the north and produce comb honey (which I think more profitable wherever the bulk of the crop is light-coloured), the pure brown-German bee is radically my preference over any Italian, Cyprian, or Syrian, or crosses between them.

You may ask, What of my crosses? This strain of bees I have been working some six or seven years, hoping to combine the best and most essential points of character of the brown German and leather-coloured Italian bees. I am forced to admit that my success has been only partial. I consider this strain to-day ahead of all other bees as a general-purpose

bee—*i.e.*, to be kept in an apiary where both comb and extracted honey is produced as a crop. But where one is running exclusively for comb honey we (my students and self) last season came to the unanimous conclusion that while we preferred this strain to pure Italians (of which we had many colonies) we yet preferred the pure brown-German bee to all for the production of comb honey as a speciality. In this cross I have succeeded, to my satisfaction, in retaining the valuable characteristics of the Italian bee, but not so well in retaining those of the pure German—so very valuable to the producer of comb honey.

While I am willing to pit colony for colony of this strain against an equal number of Italians for steadfastness to the combs and its consequent behaviour, longer-tongue, and consequent honey-gathering qualities and faithful protection of their home against all enemies, I cannot truthfully say that they will compare favourably with an equal number of colonies of the pure-brown Germans for the valuable comb honey and non-swarmling qualifications, as above stated.

New conditions and demands force us to different fixtures. In many things I find that what was best fifteen years ago (and would be to-day were conditions the same) are not best for the present. I am convinced that there is going to be a turning backward from the yellow to the brown bee. We are as yet little acquainted with the Carniolans; should it prove that this strain is equal to the Germans (if nothing more) the change would likely be done by introducing them.

Purchasers of queens prefer something new; vendors prefer the new prices. This branch of the darker race is already being praised (above the Italians) for the same qualifications possessed by the brown Germans. It is, however, further declared that they excel all in good nature; but what to me more than offsets that is an accompanying admission that they are as bad or worse than the Italians about swarming. My great objection to the swarming impulse is its hindrance to the perfection of a system for managing out apiaries without attending them continually that we may with profit produce the cheap honey of the future.—JAMES HEDDON (in *American Bee Journal*).

THE NATIONAL BEE-KEEPERS' UNION.

"A STAFFORDSHIRE BEE-KEEPER," page 342, asks me to let him know who the promoters of the above Union are, and asks if they are ashamed of their names being made public, and why do they keep in the background. Your correspondent speaks of a N.B.K.U.; yet he seems cognizant that it is not *a*, but *the* N.B.K.U. I trust that I have formed a wrong opinion of him and his purpose in asking the questions. If he is a regular reader of this Journal the questions put are as unnecessary as it is as unreasonable to expect the promoters to give publicity to their names and transactions in a journal antagonistic to the scheme intended wholly for the benefit of the bee-keeper. In the *British Bee Journal* for April 15th the editor says, "To try and form, as a writer in the *Journal of Horticulture*, 9th April, points out, a gigantic trades union of all British bee-keepers will be certain to lead to only one result—failure." I am neither a prophet, nor am I gifted with clairvoyance—at least, I do not pretend to either, as the writer of the above does; but during the past thirty years I have sold a great quantity of honey for my brother bee-keepers, and the last year has been no exception, having sold more than in any previous one, and the expense in doing so did not cost the owner more than a half-penny per lb. The above system is one of many on the same lines that the promoters of the N.B.K.U. intend carrying out, and I am confident that such a Union will succeed much to the advantage of the bee-keeper, as it has done here so long.

Now to my answers. If "A Staffordshire Bee-keeper" turns his attention to the No. for February 19th, page 160, he will see there that he may be one of the promoters if he chooses, and get all information for the asking, and if he pays particular attention to what has been written on the subject he will observe that the promoters are neither ashamed of their names being made public, nor have they kept in the background. These answers will, I hope, serve the double purpose of answering both "A Staffordshire Bee-keeper" and "A Reader of Both Journals," whose inaccurate article appeared in the *British Bee Journal* of 1st April.—A LANARKSHIRE BEE-KEEPER.

TRADE CATALOGUES RECEIVED.

Paul & Son, Cheshunt.—*List of Hardy Herbaceous Plants, Roses, Dahlias and Bedding Plants.*

Thomas Painter, Smallwood, Stoke-on-Trent.—*Catalogue of Dahlias.*



* * * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspon-

dents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Cincarias (F. J.).—The variety noted at the exhibition mentioned by you was of a lighter blue than that sent, but is similar in form, with narrow florets. We should term your variety bright blue.

Cineraria Seed (Cambridge).—You may sow the seed immediately it is gathered. We have never had finer plants than when the seed has been scattered from the heads and fallen and germinated on the soil or moist ashes on which the old plants have been stood.

Grapes Rusted (Somerset).—As there is a "leak in the flue" at the end of the house where the berries are affected, that is quite sufficient to account for the rough condition of those you have sent. We presume you have repaired the flue; if not, do so at once effectually, or you cannot have satisfactory Grapes. You are doing quite right to keep the floor damp at the driest and hottest end of the house, and it will be prudent also to leave the top ventilators open to the extent of an inch or more all night.

Cucumbers Unhealthy (W. S.).—Fresh paint is certainly very injurious to Cucumbers and may have caused the injury in this case; also in consequence of the alterations the temperature has possibly been too low. We advise to adopt a generous method of treatment, doing everything possible to encourage strong root-action, and maintain a night temperature of not less than 75°, and future leaves may possibly be healthy. If there is any smell from the paint do not entirely close the house, and you might also stand a number of bowls of water about for absorbing the deleterious fumes.

Carpet Bed Design (W. H. G.).—The general design of the bed is very good, but we think the following alterations would improve it. *Iresine Herbstii* will do for the centre, but around that, instead of No. 2, we should plant *Echeveria secunda glauca*. The Golden Lamium would be too tall for No. 3, and *Kleinia repens* would be preferable. The *Lobelia* (4) will probably not last through the season, and we should employ instead *Alternanthera paronychioides aurea*, and for 5 and 6 we should use *A. amœna*; for 7 the *Mesembryanthemum cordifolium variegatum*; 8 and 9 will do very well, but they should be separated by a thin line of Golden Feather *Pyrethrum*.

Sewage (F. J.).—You may use the sewage as you propose to trees that need manurial assistance. Many fruit trees grow strongly enough without stimulants, some too luxuriantly, so that judgment is required in the application of liquid manure. Urine is one of the best manures, and a gallon of it mixed with five or six gallons of water or soapsuds will be safe and good for fruit trees, Vines, and outdoor crops generally that require more support than the soil affords.

Fungus on Vines (T. T., Surrey).—We are sorry to inform you that your Vines are rather seriously infested with a fungus which takes possession of the leaves in a close, warm, moist atmosphere. You have certainly not given sufficient air. Never close the house at night, but leave the top ventilators slightly open, giving more air immediately the temperature commences to rise in the morning, opening also the front lights, not throwing them wide open regardless of the wind or weather, but thoughtfully to promote and maintain a pleasant and buoyant atmosphere. The black specks in the leaves are the result of the decay of the fungus, which when in growth is a bright orange colour; it is quite invisible to the naked eye, and even through a small pocket magnifier, but is painfully apparent through a powerful microscope. We advise you to either syringe the Vines and then apply sulphur through a piece of muslin, or mix sulphur with water and apply it in that form; then give more air. We should also permit a free growth of laterals—that is, encourage the production of as many fresh leaves as can develop under the full influence of light and air, as it is quite impossible for such leaves as those before us to perform their functions in assimilating the sap and secreting matter for the support of the crop and the sustenance of the Vines.

Grapes Injured (J. L. J.).—We do not think the injury sustained by the Grapes you have sent has been caused by thrips, but it may have resulted from excessive fumigation. Some kinds of tobacco paper burned in a vinery is certainly injurious to Grapes that are just set, and so are the fumes from strong tobacco. Two or three light fumigations on consecutive nights are far safer than one strong "smoking," and also efficacious. We are by no means certain that the evil in your case has been caused by fumigating. It may have been, but we have seen similar effects follow injudicious ventilation—that is, permitting the house to remain closed too long on the morning of a sunny day, then throwing open the lights to lower the temperature, causing excessive evaporation and a consequent chill to the fruit when in a particularly tender state. You had better destroy the thrips on the leaves by applying an insecticide with a sponge. A handy man may dress hundreds of leaves in an hour, and kill thousands of insects without doing the slightest injury to the Vines.

Vines Scorched (J. C.).—The Vine leaves before us are scorched, the one from the roof being more seriously injured than that from the back wall. The house is too damp and cold at night, and in all probability not ventilated early and gradually in the morning. The root-action of the *Muscadines* is also defective, the consequence no doubt of the wetness of the border to which you allude. Cannot you devise a remedy? If you cannot the best thing you can do is to extend the growths from the Black Ham-burgh, which does well growing it on the extension system. It is quite useless your expecting the *Muscadine* to succeed in such a wet border and an atmosphere suitable for the growth of Ferns. The *Chrysanthemums* are wonderfully fresh and fine. They are alluded to in another column.

Planting Carpet Bed (J. B.).—The fault in your proposed arrangement is in surrounding the triangle (8) with Golden Feather. You should have a dark plant there. *Alternanthera magnifica* would do very well healthy

plants were inserted in rich light soil when the weather gets warm in June. We have seen it quite satisfactory in Lancashire. *Oxalis corniculata rubra*, raised from seed sown now, would be better than the *Antennaria*. The Golden Feather plants must be very small for margins. The space from the outside of the triangular beds to the edge should be the same as from the inside of the curves to the band of *Kleinia*.

African Palm Oil (L. W.).—The tree producing the Palm oil of Africa is *Elais guineensis*. It is found throughout the whole of the east coast of Central Africa, whence it has been introduced to the West Indies and South America, where it is cultivated for its oil. The tree attains the height of 30 feet. The leaves are 15 feet long, and their footstalks, for 4 feet below the leaflets, are armed with hooked spines. The flowers have a strong and peculiar smell, like aniseeds mixed with Chervil leaves. The fruit forms an immense head, consisting of a great number of bright orange-coloured drupes, having an oily pulp and a stone in the centre, and it is from these drupes that the oil is obtained. The fruit is first bruised in wooden mortars to a paste, and this paste is then boiled in water; a reddish or orange-coloured oil rises to the surface, and is removed after the whole has been allowed to cool. When fresh it has an agreeable odour of Violets, and an oily consistence; but as it is removed into cooler regions it acquires the solidity of butter. This oil is called *ghea* (butter) by the natives, and is universally employed by them as butter is in Europe, and with it they daily anoint their bodies. The quantity of Palm oil now imported to this country is enormous. It is employed in the manufacture of candles, toilet soaps, and common hard soaps; and very extensively in antifrictions for the wheels of railway carriages. Palm oil contains 31 of stearin, and 69 of olein. Besides this oil, which is also called Palm butter, there is another oil obtained from the nuts by expression; and by boiling these nuts the natives make an excellent Palm soup. The tree yields from its trunk an abundance of Palm wine.

A Good Pansy (J. B.).—In answer to your question as to "What is a good Pansy?" we do not know that we can give a better reply than in the following citation from our manual on "Florists' Flowers:"—"1, Each bloom should be nearly perfectly circular, flat, and very smooth at the edge; every notch or unevenness being a blemish. 2, The petals should be thick, and of a rich velvety texture. 3, Whatever may be the colours, the principal or ground colour of the three lower petals should be alike; whether it be white, yellow, straw colour, plain, fringed, or blotched, there should not in these three petals be a shade difference in the principal colour; and the white, yellow, or straw colour should be pure. 4, Whatever may be the character of the marks or darker pencillings on the ground colour, they should be bright, dense, distinct, and retain their character, without running or flushing—that is, mixing with the ground colour. 5, The two upper petals should be perfectly uniform, whether dark or light, or fringed or blotched. The two petals immediately under them should be alike, and the lower petal, as before observed, must have the same ground colour and character as the two above it, and the pencilling or marking of the eye in the three lower petals must not break through to the edges. 6, If flowers are equal in other respects, the larger, if not the coarser, is the better; but no flower should be shown that is under 1½ inch across. 7, Ragged or notched edges, crumpled petals, indentures on the petal, indistinct markings or pencillings, and flushed or run colours, are great blemishes; but if a bloom has one ground colour to the lower petal and another colour to the side ones, or if it has two shades of ground colour at all, it is not a show flower. The yellow within the eye is not considered ground colour."

Peas Eaten (G. W.).—It is of no use simply wrapping insects in paper, and the only way in which there is any certainty of their reaching our hands is to enclose them securely in small boxes. After our letters are opened some of them necessarily remain for some time before they can be attended to, and small insects are often lost. We received the paper endorsed *Bruchus pisi*, but the weevil had gone. We can only give you a description of the weevils that attack Peas. Everyone who is acquainted with the seeds of the Pea and the Bean must have noticed that in many of them were small, round holes; and these occasionally are so numerous as to spoil the sample, and, indeed, render the seeds totally valueless for sowing; for not one of those thus pierced but would produce either a weak unhealthy plant, or not vegetate at all. Those holes in the "worm-eaten" Peas and Beans are made by a small beetle (*Bruchus granarius*), produced from a grub or caterpillar which has eaten away the vital parts of the seed; and, when it has passed through the chrysalis state, and given birth to this beetle, the latter makes the hole in order to escape into the open air, there to perpetrate more mischief upon the growing crops. The body of the beetle is a dull brown; but the elytra, or wing-covers, are black, dotted with white, but scarcely perceptibly so, unless magnified. The antennæ, or feelers, are eleven-jointed, black, and thinnest near the head, where they are also tinged with red. The head droops, the eyes are prominent, the fore-legs are rusty-coloured. This little beetle may be found upon various flowers during seven months of the year. In February it may be found on the Furze blossom, in June upon the White Thorn, and in July and August upon the Spiræa and Rhubarb flowers. The female pierces through the pod of the Pea and Bean whilst very young, and often deposits an egg in each seed. Probably the best mode of destroying this insect would be to subject the seed, as soon as harvested, for some hours, until thoroughly heated, to a temperature of 150°. This, we think, will kill the grubs without injuring the seed. Another member of this family of beetles, *Bruchus pisi*, is greatly destructive to the Pea crops. It is a small, brownish beetle, usually found at the time the plants are in flower, and depositing eggs in the tender seeds of leguminous plants, and sometimes in different kinds of corn. In these the larva—a small, white, fleshy grub—finds both a suitable habitation and an abundance of food. It undergoes all its transformations in the seed; and the perfect insect remains in it till the spring, though in fine autumns the perfect insects appear at that season also. The larvæ possess the singular instinct of never attacking the vital part of the seed till the last. The *Sitonas* are often very injurious to the Peas as well as to other leguminous crops. The attacked crops may be known by the leaves being scooped out at the edge. The beetles begin their work at the edges of the leaves, and gradually eat their way onwards, until, in bad attacks, nothing is left but the central rib, or merely the leafstalk. The beetles appear about the end of March, and are numerous till May, when they may be observed pairing. The female is after this period full of

white, somewhat transparent eggs, which, when in captivity, she deposits freely on the surface of earth or leaves. The Striped Pea-Weevil (*Sitona lineata*), is of an ochreous or light clay colour, with three whitish or ochreous stripes along the back, and with ten punctured stripes alternately of a darker and lighter clay colour along the wing-cases; the horns and legs are reddish. The Spotted Pea-Weevil (*Sitona crinita*), differs from the above in being rather smaller, and more of a grey or rosy colour, with short hairs; and in the wing-cases, which have short bristly hairs down the furrows, being spotted with black. The colours of the beetles are caused by the scales, with which they are thickly covered, and therefore only show well on fresh specimens; after a while they get rubbed off, and the black skin of the beetle appears in patches. These weevils feed by day, and shelter themselves in the ground, under clods of earth or rubbish, at night. They may be found, according to season, and the crops there may be suitable for their food throughout the summer; but it needs some care in approach to see them on the plant, as they drop down at the vibration of a heavy step, and lie awhile as if dead. Pea crops suffer most from attacks of the weevil in their early stages of growth, as at this time the plants are tender and the leafage young, and therefore more liable to injury; also the number of beetles that would do but little harm to a fairly grown plant, soon destroy one with only a dozen or so of leaves. It should be kept in view that a stunted growth, whether caused by the nature or method of cultivation of the soil, or the character of the season, increases the evil by keeping the plants back for a longer time in this critical stage of growth. The attacks of the weevils are noted as being worst in dry weather, and (as they feed by day) good syringings with water or any addition thought fit, such as would make the plants distasteful to the beetles and encourage healthy growth, would be serviceable. It is noted that a dressing of lime or soot given to the Peas (wetting them first to make it adhere) is an easily applied and generally effective remedy. As neither of these weevils appear to answer exactly to the circumstances of the case you describe, we shall be glad to receive specimens of the enemy and of the plants that have been attacked, packed securely in a box, the weevils placed in a small one enclosed in the larger with the Peas, that should reach us in a fresh state.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (*W. O.*)—1, *Acacia linearis*; 2, *Acacia hybrida*; 3, *Acacia obliqua*; 4, *Cryptomeria japonica*. (*J. R., Fareham*).—The Morel, *Morchella esculenta*. (*J. O. K.*)—1, *Sparmannia africana*; 2, *Mahonia aquifolia*; 3, We cannot recognise. (*Cottingham*).—*Anemone apennina*. (*Thinghill*).—1, *Cœlogyne brunnea*; 2, *Celsia Arcturus*; 3, a seedling *Amaryllis*; 4, *Cattleya guttata*; 5, *Asplenium formosum*. (*L. R.*)—Quite unrecognisable in such a withered and crushed condition. (*S. W.*)—1, *Insufficient*; 2, *Saxifraga oppositifolia*; 3, *Elæagnus argentea*.

Bees (B. H.).—We know of several excellent stocks of bees much nearer London than the district to which you allude, and we see no reason why they should not succeed there.

COVENT GARDEN MARKET.—APRIL 29TH.

PRICES remain about the same as last week, supplies being good.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples	½ sieve	2 6 to 4 6	Oranges	100	4 0 to 7 0
Chestnuts	bushel	16 0 0 0	Peaches	per doz.	0 0 0 0
Cobs, Kent ..	per 100 lbs.	55 0 0 0	Pears, kitchen ..	dozen	1 0 3 0
Currants, Red ..	½ sieve	0 0 0 0	" dessert	dozen	0 0 0 0
" Black	½ sieve	0 0 0 0	Pine Apples English ..	lb.	3 6 4 0
Figs	dozen	0 0 0 0	Plums	½ sieve	0 0 0 0
Grapes	lb.	6 0 10 0	Strawberries	lb.	4 0 8 0
Lemons	case	10 0 15 0	St. Michael Pines ..	each	3 0 7 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes	dozen	2 0 to 4 0	Lettuce	dozen	1 0 to 2 0
Asparagus	bundle	7 0 8 0	Mushrooms	punnet	0 0 1 4
Beans, Kidney	100	1 0 0 0	Mustard and Cress punnet	0 2 0 0	
Beet, Red	dozen	1 0 2 0	Onions	bunch	0 3 0 6
Broccoli	bundle	0 9 1 0	Parsley	dozen bunches	2 0 3 0
Brussels Sprouts ..	½ sieve	0 0 0 0	Parsnips	dozen	1 0 2 0
Cabbage	dozen	0 0 1 0	Potatoes	cwt.	4 0 5 0
Capsicums	100	1 6 2 0	" Kidney	cwt.	4 0 5 0
Carrots	bunch	0 3 0 4	Rhubarb	bundle	0 4 0 0
Cauliflowers	dozen	2 0 3 0	Salsafy	bundle	1 0 0 0
Celery	bundle	1 6 2 0	Scorzoneria	bundle	1 6 0 0
Coleworts	dcz. bunches	2 0 4 0	Seakale	per basket	1 6 2 0
Cucumbers	each	0 3 0 6	Shallots	lb.	0 3 0 0
Endive	dozen	1 0 2 0	Spinach	bushel	2 0 4 0
Heros	bunch	0 2 0 0	Tomatoes	lb.	0 0 0 0
Leeks	bunch	0 3 0 4	Turnips	bunch	0 4 0 0



PROVISION FOR WINTER.

As winter lingered upon the threshold of spring, and week after week passed by before the season of brisk strong

growth in vegetation returned to us once more, the store of hay, straw, and roots became exhausted, and only dairy farmers could afford to buy more because they do business upon the safe principle of small profits and quick returns. Many a man was sorely puzzled as to what was best to do under such trying circumstances. Blame was cast upon the seasons, the times, and in many instances upon the landlords also; but to how many men did it occur to think the matter out, and to inquire, "Am I to blame?" The time for easy-going farming is past, and well for us will it be if the drought of last summer and the cold late spring of the present year serve to bring home to our minds this important fact, and stir us up to see if we cannot do something more to modify and soften evils which, do what we may, are not to be avoided altogether. The term is a happy one, for depend upon it to avoid a possible evil so far as lies in our power is altogether better than trying—often vainly trying—to overcome it. This is the thought which prompts us to write this article, our aim being to urge upon our readers the importance of timely culture, and the provision of an ample store of home-grown food for winter and early spring. The papers on artificial manures, seed time, alternate husbandry, and still more recent papers, all bear upon this matter, and we say to the farmer who deliberately fills his yards with cattle and his folds with sheep from autumn till spring without making ample provision of food for them, however late the spring may prove, that he is to blame, and that if he cannot arrange his business upon a sound safe basis he is unfit to have the control of it.

Of the failures of crops last year arising from the drought the hay and root crop suffered most—why? Now, we cannot agree with the too common opinion that in a hot dry summer a light crop of hay is inevitable. It is true enough that the crop was so inferior upon much land last year as to be hardly worth saving. We saw several meadows where no tedder was required, the grass when mown being so thin that it required no turning or tossing about, the very small quantity being got together by raking; but that land was very poor, and if manure had been applied to it it had been used so late in the season when the barometer was at set fair, and no rain fell to dissolve and convey it to the roots. But where artificial manure was used in February and sheep kept off the grass after that month a full crop of hay was the result—and such hay! Certainly we never made better hay, seldom so good; and we had pleasing evidence of the truth of the saying, that the best hay costs much less to make than bad or inferior hay. To have hay as good in quality as is possible no rain must fall upon it after the mowing, and it therefore requires very little making. This reference to the hay crop cannot, we fear, do much good for this season; but the matter is so important, and faulty practice in the management of grass land is so common, that we omit no opportunity of calling attention to it.

Turning to the equally important question of root crops, perhaps a crucial test of last year's results would be to inquire what use has been made upon a farm of roots during the past winter, and what quantity remains in store now? Upon many a farm the Mangold crop was a failure, wholly or in part, and Turnips have been the mainstay for winter folding. In Mangold and Swede culture considerable difference of opinion exists as to sowing upon ridges or upon the flat. Ought this to be a matter of opinion? We think not. In a deep rich soil in thorough cultivation ridges are uncalled for, and the labour of making them should be avoided. In a poor thin soil the advantage of ridges is, on the contrary, so obvious that no doubt or difference of opinion should exist among intelligent farmers. Sow pure home-mixed artificial manure in the quantities we have repeatedly given in these pages broadcast upon the land, then stir it well with horse hoes or cultivators, rolling and harrowing if necessary to get a fine tilth; strike out deep furrows with the double-breasted plough 2 feet apart, put farmyard manure along the bottom of the furrows, cover it by passing the plough between

the furrows and so form the ridges, upon the top of which sow the seed and then press lightly by passing a light wooden roller over it. By this method we gain depth of soil, and an ample store of moist humus is ready for the main roots, so that the plant is able to withstand the effects of a drought severe even as that of last summer, and we get a crop of such weight and bulk as to be more valuable than the land upon which it was grown. So treated, our soil is brought into condition to grow any kind of Mangold, and we can afford to smile at the seedsmen's statement that Mammoth Long Red Mangolds require a deep soil. To those who have not yet sown the seed of this useful crop we would urge the importance of losing no more time; our own seed was sown early in April, and the seed is now germinating freely.

(To be continued.)

WORK ON THE HOME FARM.

Live Stock.—Since the cows have had an abundant supply of Rye there has been a material difference in the quantity of the milk; the cream is richer, and the butter deepens in colour and improves in flavour. No sooner did the Rye come into use than hay was turned from, and we had to increase the quantity of Rye, and gladly was this done for every reason, one of which was the fact that notwithstanding the late spring the Rye was fast coming into ear more than a week ago, and it must be used quickly or else passed through the chaffing machine. None of the cows or store cattle will leave the yards till the first or second week of May, by which time we hope to have an ample store of food for them upon the pastures. Calves that are draughted out for veal have been fattened and passed on to the butcher at from £4 to £5 apiece for cash, and we consider this a paying transaction—quite one of those minor points of detail which tell so well upon our balance-sheet. Keep them for a year and what are they worth in the market? only £2 or £3 more, and they must be fairly well bred to produce that amount. Be it remembered that we are writing about the calves of dairy cows which have to be weaned early, and they cannot fairly be compared to well-bred calves left to run with the cows to suck at will. A hundred pounds' worth of calves sold now is a matter for congratulation, and it is a wise and safe proceeding if we bear in mind the depression of markets, and the low, exceedingly low, prices offered for store cattle just now. No doubt prices will improve somewhat with warm weather and soft showers, but how few can afford to wait for that this spring? To purchase enough hay for two or three weeks for forty or fifty head of cattle would take off even that margin of profit which we claim to find in the manure, and so we fear many a herd of promising beasts has had to be dispersed at so low a price as to lead to vexation and disappointment, owing to the protracted cold weather and failing supply of winter stores. May we apply the lesson? Then we would say, Do not overstock your yards in autumn, but bear in mind that our springs are fickle, often proving late and cold; and if we keep live stock at all it certainly does not answer to let them run short of food, apart from the cruelty of such a proceeding.

OUR LETTER BOX.

Milking Guernsey Cows (W.).—It is one of the best traits in the character of the Channel Island cattle that they will, when properly milked, continue to give milk until the period of calving again; probably the milk may not be fit for use for several days previous to calving. It should, however, be drawn away to prevent the danger of parturient fever.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	9 A.M.					IN THE DAY.				Rain
	Barometer at 32 ^d and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1885.										
April.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
Sunday	30.319	56.1	49.8	N.E.	46.7	70.4	38.4	105.7	29.9	—
Monday	30.297	57.6	49.9	W.	47.5	72.8	40.2	112.3	30.4	—
Tuesday	30.158	59.3	49.1	S.W.	49.2	71.7	45.0	112.8	35.3	—
Wednesday ..	29.852	61.4	53.3	S.	50.3	67.3	47.2	108.4	36.0	0.029
Thursday	29.676	53.2	49.8	S.E.	51.5	61.6	46.9	104.4	42.4	0.124
Friday	29.656	52.6	48.8	S.E.	50.2	59.7	42.6	87.9	37.5	0.106
Saturday	29.388	55.9	51.4	S.E.	49.3	62.1	48.8	103.2	44.4	0.099
	29.907	56.6	50.3		49.3	66.5	44.2	104.9	36.6	0.358

REMARKS.

19th.—Very fine and warm, foggy towards midnight.

20th.—Fine, bright, and hot.

21st.—Very fine, and almost cloudless throughout.

22nd.—Very fine, but cooler and some clouds.

23rd.—Sunshine and showers, the latter chiefly in the afternoon.

24th.—Cloudy morning, some sun in afternoon, slight shower in evening.

25th.—Heavy rain very early, gale in morning, with sun and slight rain; fine afterwards.

The first four days of the week exceptionally warm; the maxima on each of the first three exceeding 70°, and being just that usual in the middle of June. Cooler weather followed, with a gale on the 25th, which has been very trying to fruit blossom.—G. J. SIMONS.



COMING EVENTS

7	TH	Royal Society at 4.30 P.M.; Linnean Society at 8 P.M.
8	F	Quekett Club at 8 P.M.
9	S	Royal Botanic Society at 3.45 P.M.
10	SUN	5TH SUNDAY AFTER EASTER. Show of Plants at Antwerp (two days).
11	M	[Orchid Conference and Exhibition (two days).
12	TU	Royal Horticultural Society, Fruit and Floral Committees at 11 A.M.
13	W	Society of Arts at 8 P.M.

FLORAL INVESTMENTS.

UTILITARIANISM is a characteristic of the times. However much the "beautiful" may be appreciated, something useful, substantial, tangible is the object of the majority in their conduct and speculations. It is quite true that numbers of persons indulge in "fancies" solely for the pleasure they derive from them, but even the enjoyment of those ardent individuals is not lessened if their hobbies "pay." They are apt to estimate their possessions by their rarity, or in other words by their value in pounds sterling. The most devoted lovers of art will not give £5000 for a picture if it is only worth £4000, and small blame to them. If they did it would be a reflection on their judgment. It is the same with plants. Enthusiastic amateurs buy them, grow them, derive pleasure from them. That is their main object; but the enjoyment of their possessions is not mitigated by the consciousness that they are worth a few hundred pounds more than they cost. They do not want to sell what they have obtained—that is their last thought; but it is none the less satisfactory to feel they hold value for money according to the current prices of the day.

It is on this principle of intrinsic value for articles possessed that may be traced the earnestness that is displayed in the acquisition of cherished plants. Outsiders marvel at what they consider the extraordinary conduct of persons who will give £100 for a plant that can be carried home in the pocket of the purchaser; but as a rule the purchaser has a pretty good idea of what he is doing, and in the majority of cases specialists have good grounds for their action, regarded even from a commercial point of view. We make no reference to recognised traders in plants. Their business is to buy and sell to the best advantage; but non-traders work on the same lines, and very properly. They like to feel that their cherished treasures are increasing in value, as this is at once evidence of the skill of the cultivator and the prescience of the purchaser. Everybody likes to feel that their possessions, if sold to-morrow, would realise considerably more than has been invested in procuring and maintaining them. There are many kinds of flowers and plants, well selected, well grown, and judiciously increased, that will do this. There are collections both of florists' flowers, hardy rarities—and especially, perhaps, of Orchids—that have increased in value to a remarkable extent, and they represent a satisfactory increase of the capital of the owners of them. It is quite true there are contrary instances—namely, of plants constantly deteriorating. This often arises from the very necessity of the case, and is more frequently the result of unsuitable quarters for them than of want of skill or care on the part of the cultivator. But the real specialist makes due provision for the accommodation of his plants. He knows their value and requirements, and acts accordingly. This is but a matter of prudence; yet the fact cannot be overlooked that numbers of persons spend considerable sums in plants that they do not understand, and cannot, therefore, see the

"good" of providing the necessary means and conveniences for growing them well and increasing their value. This is to be regretted, both in the interest of the owner of them and the individual in whose charge they are, for notwithstanding his efforts to prevent it he has to endure, and a painful endurance it is, the consciousness of their steady yet certain depreciation. Plants cannot increase in beauty and value when the cultivator is ever engaged in a contest with adverse influences—a continual struggle to keep the plants alive; whereas, when sound judgment is exercised in selection, and skilful culture is combined with adequate means, floral investments are satisfactorily remunerative.

Our thoughts have been directed to this subject from glancing over a little manual on Orchids by our coadjutor, Mr. Lewis Castle. It is not our intention to give any elaborate review of this work. We shall merely extract from it a short chapter on the value of Orchids.

"The auction sales conducted at Stevens's Rooms, King Street, Covent Garden, for so many years, and latterly at Messrs. Protheroe's, Cheapside, have dispersed many fine collections, and have also been the means of large numbers of imported Orchids being placed in the hands of the public. A record of these sales would afford some curious facts in the history of Orchids, but a short notice of the principal prices that have been obtained will suffice to indicate the enormous amount of money that has been expended upon these plants within the past forty years. Good prices were obtained as early as 1830, such as £26 for *Sobralia macrantha*; £10 for *Arpophyllum giganteum*; £15 for *Lælia superbiens*, and £17 for *Barkeria spectabilis*. Sales of 48 to 168 lots realising from £118 to £600. In 1846 Mr. Barker's collection was sold to Mr. Blandy of Reading for £900, and about the same time a plant of *Vanda Lowii* was sold for £30, a large collection of Central American Orchids from Mr. Skinner producing £613. Some of Mr. Bateman's plants were sold in 1850, when *Angræcum eburneum* fetched 19 guineas, *Vanda suavis* 17 guineas, and others of proportionate amounts. At the sale of Warscewicz's introduction in 1853, the chief amount was 16 guineas for *Epidendrum Frederici Gulielmi*, and at another sale the same year *Phalænopsis grandiflora* realised £15 10s. Prices began to increase, and in 1855, at Mr. Schröder's sale, *Aerides Schröderi* fetched £89, *Vanda suavis* £31, *Aerides affine* £26, and *Oncidium Lanceanum*, said to be the finest plant then in cultivation, £16. The Loddiges' collection was sold in 1856, and one portion of 280 lots raised the sum of £717, *Vanda Batemanni* £43, *Aerides nobile* £21, *A. Schroederi* 19 guineas, and *Saccolabium ampullaceum* £15. In the same year the Horticultural Society's collection was brought to the hammer, 300 lots realising £554, while in 1859 another portion was sold for £470.

"At the first sale the most remarkable plants sold were *Phalænopsis amabilis*, which was bought by the Duke of Devonshire for £68 5s., and this was the fine specimen which Mr. Fortune purchased in the Island of Luzon for a dollar ten or twelve years previously, and *Lælia superbiens*, the finest specimen in Europe, with 220 pseudo-bulbs, and 17 feet in circumference, £36 15s., bought by Mr. Fairrie of Liverpool; at the latter sale, *Aerides Schröderi* realised £31. Before this time it is said that the Duke of Devonshire had given Messrs. Rollisson & Son £100 for *Phalænopsis amabilis*. In 1861, Dr. Butler's Orchids were sold, 300 lots producing £1500, *Saccolabium guttatum* and *S. giganteum* fetching £52 to £46 respectively. At a sale in Liverpool in 1868 Messrs. Veitch gave 67 guineas for the finest plant of *Dendrobium Falconeri* in the country, which a few years before had been bought for 4 guineas. The Meadow Bank collection of 600 lots was sold for £2000, *Lælia anceps Dawsoni* realising £46, and *Cattleya exoniensis* £32. The Pendlebury Orchids were also dispersed for the sum of £2824, some very high prices having been obtained, as £55 for *Odontoglossum navium majus*, *Saccolabium giganteum* £72,

Aerides Schroederi £55, and *Cattleya labiata*, £31. The Rev. W. Ellis's collection sold for £600 in 1872. Mr. Russell's of Falkirk for £2211, when *Cattleya Russelliana* fetched £44, *Saccolabium giganteum* £72, and *S. guttatum* £65. In 1877, Mr. Wilkins' Orchids sold for £1300. The Manley Hall collection of S. Mendel, Esq., which during several years (from 1869-73) had gained such fame, was sold for over £4000, *Saccolabium guttatum superbum* realising £46, *Cypripedium Stonei* £38, *Oncidium splendidum* £47, *Masdevallia Lindeni* £39, and many other similar amounts.

"The first portion of Mr. Day's celebrated Tottenham collection was sold early in 1881 for £1847, when *Cypripedium Stonei platytanium* brought the enormous sum of 140 guineas, the only plants of *Cattleya Blunti* in the country realising 17 guineas and £42 respectively. The second portion, sold April 12th and 13th, brought £1803, *Cattleya exoniensis* 48 guineas, *Phalænopsis intermedia* 62 and 42 guineas, *Dendrobium Schroederi* 38 guineas, *Lælia purpurata* 30 guineas, and *Cypripedium Spicerianum* 25 guineas. The third portion was sold the 4th and 5th of May, the total being £1888 for 659 lots; *Cypripedium Stonei platytanium*, 120 guineas, *Cypripedium Spicerianum* 42 guineas, *Cattleya labiata*, autumn-flowering variety, 40 guineas, and many others realised similarly high prices. The fourth portion was sold at the end of May for £1521, when *Cattleya Skinneri alba* realised 52 guineas. The total amount of these four sales realised £7000, and some others were sold subsequently. Since then high prices have been obtained at various sales; but the most remarkable of all was in September, 1883, when a plant of a new *Aerides*, introduced by Mr. F. Sander, was sold to Sir Trevor Lawrence for 235 guineas, the highest price ever paid for any Orchid. This was subsequently named *Aerides Lawrenciæ*. A portion of Dr. Paterson's collection was sold in 1883, realising £800, the plants bringing large prices, as *Cattleya labiata Warneri*, 79 pseudo-bulbs 45 guineas, *C. labiata* 39 guineas, and *Dendrobium thyriflorum Walkerianum* 37 guineas.

"Some hybrid Orchids have also realised very high prices, running up to and above 200 guineas; yet in contrast with these, abundance of useful and easily grown Orchids can now be purchased for a few shillings each, and for £5 an interesting little collection can be obtained. We thus have a remarkable contrast in the value of these plants, for while rare and beautiful species, varieties or hybrids, have never realised such high prices as at the present time, never could 'cool house' Orchids be procured so cheaply. As an illustration of the variability of prices, the history of *Dendrobium nobile nobilius*, as related by Mr. H. James, may fittingly conclude these notes. 'The original plant of *D. nobile nobilius* was bought at Stevens's Rooms in 1876, and was one of a bundle of twelve plants, which cost 12s. It flowered in the imported pseudo-bulb early in 1877, and was exhibited at Kensington. It was shortly afterwards sold to Messrs. Rolleson for 5 guineas, by whom it was exceedingly well grown and flowered freely in 1879, when it was sent to the Ghent Show in extremely cold weather and nearly killed. In the following autumn I bought the apparently dead plant for 75s., and raised six small plants from the tops of the pseudo-bulbs.' Small specimens still realise 10 guineas each, and one of the finest, that at Selborne, Streatham, is probably worth at least 60 guineas."

On another occasion we may perhaps give an example of this Orchid "Review" of a totally different character. On reading the *brochure* we were reminded of one of the many pithy sayings of Dr. Johnson—namely, "When a man writes from his own mind he writes very rapidly; the greatest part of a writer's time is spent in reading in order to write. A man will turn over half a library to make one book." So much information could not be compressed into fifty-six pages without much research, and we have no hesitation in saying the manual is worth its money to all who are interested in the remarkable family of plants to which it is devoted.

We observe in it lists of hybrid Orchids raised by Mr. Dominy and Mr. Seden, the former being credited with twenty-three, the latter with fifty-four hybrids. At the meeting of the Royal Horticultural Society on October 11th, 1881, Mr. Dominy was worthily presented with a gold watch and 200 guineas in recognition of his skill and perseverance. We have more than once intimated that successful hybridisers and creators of valuable plants are at least as well deserving of reward as persons who buy, grow, and exhibit them, and we think that Mr. Seden's unparalleled success as a raiser of Orchids ought not to be overlooked.

GARDENIA CULTURE.

WHEN I commenced my gardening career forty years ago Gardenias were as much esteemed as now. A few plants at the end of a Pine stove that gave some esteemed flowers each year in April and May were my first Gardenias. The plants were old, they were cut in each year after flowering, potted when they had started afresh, encouraged to make a good growth to set the buds, and were rested through the winter, just giving sufficient water to keep the foliage fresh. This, according to modern ideas, was quite inaccurate, and yet nine-tenths of the practice of the present time is very similar. In many places a few plants in pots grown with a mixed collection of plants are what we find employed to supply the demand for this esteemed flower. The blooms under such circumstances are small, and small Gardenias are no good—nobody cares for them, therefore we must grow them large, and as far as my experience goes this cannot be done with plants in pots. Gardenias can of course be grown in pots, and are very useful for decorative purposes, therefore we are impelled to pursue of sheer necessity the least advantageous system.

To grow Gardenias well it is necessary that the house be light, well ventilated, and efficiently heated. A low span-roofed structure is the best, with a centre bed 6 feet wide and 3 feet high from the floor, with two rows of plants 3 feet apart, the walls being 4½ inches, and taken off the width of the pit or the 6 feet, the plants being placed nearer the edge, so as to have them 3 feet apart every way. A pathway 2 feet wide all round will be necessary, and a 2 feet shelf of slate or stone round the outside, and 2 feet 6 inches from the floor. The side walls may be 2 feet 6 inches high, having wooden ventilators in them 2 feet 3 inches long and 9 inches deep at every 3 feet, which will allow of a 9-inch pillar only between them, and which should come opposite or immediately under the front uprights or the rafters hung at the top, the air in entering passing the hot-water pipes beneath the shelf. The side lights must be 2 feet high, which with the wall plate and head will make the sides fully 5 feet high from the floor, and as the house is 14 feet wide inside and with 9-inch side walls we have with a fall for the roof of 1 foot to 3 feet. The ventilation at top is best afforded in lantern fashion, which need not have a wider opening than 1 foot the whole length, and if covered with a wooden ventilator that will lift 6 inches nothing more is wanted. Four rows of 4-inch pipes will be needed on each side and beneath the side shelves; the top surface of, say, two of those on each side may be furnished with evaporation troughs.

Such a house with a fixed roof, light yet substantial rafters, and sashbars glazed with 21-oz. sheet glass, thirds quality, in large squares is not very expensive, and similar houses are in extensive use in nurseries where they do things more economically than in private gardens. It will suit Gardenias well; but where the demand is great, and a regular succession of flowers is required, there should be two houses, or at least a partition, so that there may not be any break in the succession as would otherwise arise when the plants are renewed, as they need be every third year after planting out. The side shelves give space for growing on young plants, and afford those required in pots for decorative purposes.

In preparing the centre bed we must provide good drainage, and to save the trouble and expense of drains there should be holes left in the course of bricks just above the floor by which the superfluous water can drain off on to the paths, which are best formed of iron grating with gravel underneath, or if of cement, tiles, &c., there must be a fall for the water to run off to a grating. This is a certain way of getting to know when a watering has been given in sufficient quantity to show at the drainage. The bottom of the bed must be concreted, and be highest in the centre, so as to throw the water passing the drainage to the sides. Eighteen inches depth of drainage is necessary, as we only need 18 inches depth of soil, placing the roughest at the bottom and finest at top, which may be gravel or other material secured with a layer of fibrous peat. We then form hillocks where the plants are intended to be, flattening their tops, so that we have 15 inches of compost in the centre above the layer of peat, which may be 3 inches thick, or 18 inches in all above the drainage.

The most suitable compost is fibrous brown peat, tearing it up roughly, and removing any roots of large size, mixing together the fine as well as the rough with a seventh part of sharp or crystal sand. It must be moist, if not it must be made so by watering it, and be put together firmly. After turning the plants out of the pots with the soil in a moist state, have the sides of the ball loosened a little, and ram the soil quite firmly up to them, finishing with a flat top and about 3 inches wider than the ball all round, and with a slight dish to hold water.

The plants suitable for placing out are those in 6 or 8-inch pots, and which have been grown quickly without check, strong, healthy, and well rooted. Old starved stunted plants are no use. Such as are a year and not more than two years old are best, as they will under good treatment be bushy, and about the time they begin growing in April or early May is the season to plant, as they then make roots abundantly preparatory to the production of fresh growth.

In the after management it is necessary to add fresh soil as the roots extend, in which way the whole of the bed will be occupied in about twelve months. The plants will be strong, with foliage like Laurcls and flowers produced in great profusion, large, and of great substance. To keep them going copious supplies of tepid liquid may be given occasionally, with a surface dressing of rough peat and a fourth of cow dung or sheep droppings free from worms. The soil must be kept constantly moist, not giving any, however, until the soil requires it. Soot water 1 peck to 30 gallons of water is a capital stimulant. The plants need not be kept beyond the second or third year, as they will not only become too large, but the flowers get so small as not to equal those from one or two-year-old plants. By two-year-old plants I mean those planted now or shortly, giving fine flowers next season and the year following, when they may be removed, or not later the following season, and another house should be planted the year preceding the intended removal of the first plants.

Gardenias like plenty of light to insure the solidification of the growth, enough heat to keep them constantly active, and abundance of moisture. There must not be any resting season, consequently they are kept in constant activity—*i.e.*, making growth, setting buds, and flowering. There is nothing Gardenias like so much as a thorough syringing in the morning and again in the afternoon, or at closing time. Less water and moisture will be needed in dull than in bright weather, in winter than in summer, and if clear rain water is used the flowers are not injured in the least. Ventilation is necessary early when the temperature is between 70° and 75°, increasing it with the sun heat, keeping it through the day from May to July at 80° to 85° from sun heat, and closing at 80°, after which the temperature may rise 5° to 10°. In spring and autumn 70° to 75° by day, with a rise of 5° to 10° from bright sun, and 65° at night, will suffice. In winter provide a temperature of 60° to 65° at night, and 70° to 75° by day with sun heat. There must be no checks, the soil must never be dry, and must never be made sodden by needless waterings; the atmosphere should never be rendered suddenly dry by excessive ventilation nor suddenly cool by cold current of air.

No pruning is required; indeed, it ruins all planted-out Gardenias, especially that pruning which removes with every flower a portion of wood. Irregularities of growths may need removing, but if the plants are properly prepared before planting out the knife will be needed very little if at all. When they want pruning it is better to root them out and consign them to the rubbish heap. If the flowers are cut with wood a sort of pruning will be needed after flowering to get them to break where desired and keep them in form, but the less of this the better. If the flowers are cut with wood two or three breaks are destroyed at the base of each, and those left would give a flower in as many weeks' time as it will take a fresh break to afford in as many months. Do not cut the flowers in this way if succession is required, and the planting-out system ensures flowers throughout the year, more in spring than at any other season, but still an acceptable quantity at nearly all seasons.

The plants are raised from cuttings of strong half-ripened wood, inserted early, and grown on quickly, not allowing them to become root-bound, but shifting them into larger pots as the others are filled with roots. They are stopped so as to form well-furnished plants, but this should be confined to the strongest, and if wanted for planting out they ought not to be allowed to flower. In twelve months they will be fine plants in 6-inch pots, the second year in 8-inch or larger pots, and then they are fit to plant out. If plants in pots are wanted, and the side shelves are intended both for growing those for planting and for flowering in pots, the best way is not to stop the shoots after July even the first year, and then we have good flowering plants in 6-inch or 7-inch pots. After flowering merely prune them into shape, and shift when the new breaks are a little advanced into 8 or 9-inch pots, by which means very fine plants are had, and if we want larger repeat the pruning after flowering and give 12-inch pots, and these specimens will give a quantity of flowers. The plants may be kept in pots for years, but it is not worth the practice. I have several in

15-inch pots; they are free-flowering and healthy, yet not comparable with younger plants. Gardenias in pots require the same treatment as those planted out, the only difference is in their needing more feeding, and I fancy some charcoal in the soil is an advantage.

The principal insect enemy is mealy bug, but this will not make headway if syringing is properly done. If it does and scale appears syringe with petroleum—a wineglassful to 3 gallons of water, keeping it well mixed.

The variety I grow is Standish's; but whether it is a selected form of *G. florida* I do not know.—G. ABBEY.

THE CHILIAN CROCUS.

(*TECOPHYLÆA CYANOCROCUS*.)

THIS charming and most distinct plant opened its first blossom on March 10th and lasted until quite recently. The plant is still very rare under cultivation. Herr Max Leichtlin must, I believe, be credited with its introduction to English gardens. I saw it in the Newton Nurseries



Fig. 65.—*Tecophylæa cyanocrocus*.

Chester, and through the kindness of Messrs. James Dickson & Sons was enabled to make the accompanying sketch. The flowers are solitary, but the same stem branching sometimes carries two flowers from 2 to 4 inches high and about 1½ inch across when expanded, of a rich ultramarine blue, white clouded near the base and midway in the typical form; those of the variety *Leichtlini* are soft azure blue. The colour of the type may be compared to *Gentiana verna*; the outer divisions of the perianth are longer and much broader than the inner ones; leaves lanceolate, sheathing at the base, from 3 to 5 inches long, deep green.

I do not think it will prove hardy in all gardens. In very warm sheltered positions with efficient drainage it will doubtless thrive, but such a gem is honestly worth the protection of a handlight or small frame, and may be treated like *Bessera elegans* and other bulbs from warm temperate South America. It should be planted in August or September in rich loamy, sandy soil, with ample drainage, and after flowering allow the foliage to mature gradually, so that the bulbs may be well developed; and to facilitate a thorough ripening allow them to have a partial baking in the sun by withholding moisture and allowing them to be fully exposed to strong sunlight, after which they may be lifted and stored till planting time.—T.

OPEN-AIR TOMATOES.

THERE is no more popular fruit at the present time than the Tomato. Many who only a few years ago looked upon them as nearly poisonous, or at most as plants bearing ornamental fruits, now value them highly. Undoubtedly the Tomato is most delicious, and its cultivation should be very general, but only in glass houses can it be grown to bear fruit very early in spring, late in autumn, or during the winter; though all who possess

a garden or a wall may grow them successfully in summer. We have tried them in the open in Scotland, as well as in the more sunny south, and in both instances they proved remunerative. Indeed we never trouble to grow Tomatoes under glass during July, August, and September, as they come so freely in the open then that we depend on them entirely for a supply. We have tried them planted out in the open quarters, with only a stick to hold them up; and although they did fairly well in this way, the plan was not so successful as growing them against a wall, and this is the way we advise them to be grown. A wall with a south or east aspect is the best. They will not do well facing the north or west. A sunny position is greatly enjoyed, and they are by no means out of place growing against the wall of a dwelling house, as they are very ornamental while in fruit. Flowering climbers may clothe part of the walls, but wherever there is a bare space, though it may only be a narrow strip 12 inches wide, fill it with a Tomato plant. Almost every grower has given Tomatoes too much manure to root into, and we have grown them extensively in this way; but to secure abundance of fruit and really magnificent crops no manure whatever should be mixed with the soil. We have been trying them without the manure, and find them succeed better.

This season no dung will be used with the soil for our Tomato plants. Just now we have the finest spring crop in pots we ever possessed, and they are growing in pure loam. In soil containing a large quantity of manure they grow much too freely, form too much superfluous wood, and not enough of fruit. This is the objection to manure, and it certainly is a very strong one. Without manure the plants do not grow so strongly, but they are more robust, the wood being very short-jointed and extremely fruitful. We use Beeson's manure, and where a very long succession of superior fruits is desired this excellent manure is most satisfactory. It does not make the plants produce superfluous growths, but it affords substantial nourishment. Wherever the Tomato plants are to be planted take two or three wheelbarrowloads of soil from each position, and refill with pure loam, put a few ashes or something at the bottom to act as drainage, and where Beeson's manure can be obtained add one peck of it to every three barrowloads of soil.

Raising plants for open-air culture is a matter of much importance. It is difficult for many small growers to accomplish this, and it is surprising that no one advertises young plants ready for planting-out in May. Many would then grow them who do not now, and the demand would be sure to pay the raiser. Seed sown in a pot and placed in a warm pit or cold frame will germinate freely in April, and when the young plants are 3 inches high they should be placed singly into 3-inch pots. Use loam only, and keep them close in the frame for a time, but do not draw them up tenderly, as they will succeed better when planted out if grown on hardy from the first. Plants grown in much heat and quite large now may also be placed out, but they must be well hardened previously, and most likely they will stand still so long during this operation that the little-late cool-grown ones will overtake them before July. From the middle to the end of May is a good time to place out hardened plants. They will start growing immediately, and supply ripe fruit in July. Put one plant in the centre of each heap of new soil, or one may be placed at each end. Where no new soil can be procured plant them in the ordinary garden soil, but keep the dung away, and do not by any means give up the idea of growing them because no soil can be had of some special quality. Try them in any old material, and the results will be more gratifying than could be anticipated. Turn the plants out of the pots, let them well into the soil, press it firmly, and water thoroughly. Should the weather prove cold at night after planting hang some old hags over them, or stand a piece of board against each plant, but anything of this kind must be taken off during the day. As growth advances keep nailing up the leading shoots, but pinch all side shoots off as soon as they can be seen. Single stems always fruit much better than a number, and this way of restricting them has much to do with their successful culture.

—A KITCHEN GARDENER.

VIOLET CULTURE UNDER GLASS AND OUT OF DOORS.

THIS being the proper time to prepare plants for yielding gatherings of the universally esteemed Violet from the middle of September next to the following April from plants in pits and frames, when the supply may be prolonged for three or four months by plants occupying south and north aspects, a few remarks as to the best method of procedure to be followed with a view to securing the best possible results may therefore be acceptable to your readers. I have grown Violets somewhat largely and successfully in various ways during the last fourteen years; but the most satisfactory results have been achieved by following a course of treatment which I tried last year for the first time, I will therefore confine my remarks to that mode of culture, which is as follows.

Select from the plants which have been flowering all the winter as many of the strongest young plants having the most plump and firm crowns as may be required for yielding gatherings of flowers throughout the autumn, winter, and spring months. Shorten their roots, and then pot them singly in 3-inch pots in a compost consisting of three parts of light sandy loam and one of leaf mould, making the soil moderately firm about

the roots in potting. Then stand the pots on coal ashes in a pit or frame near the glass in a sunny situation, give sufficient water through a medium-sized rose to settle the soil, and shade the plants from bright sunshine for a few days until the roots have taken to the soil, when they should be fully exposed to the sun, and be kept well supplied with moisture at the roots and overhead, the latter by syringing the plants heavily with clean water morning and afternoon, at closing time, about four o'clock. The plants, however, should have abundance of air during the interval from admitting it in the morning—about half past seven o'clock—and stopping it in the afternoon, and the runners be kept persistently pinched so as to concentrate all energies of the individual plants to the formation and consolidation of large floriferous crowns. They should then be planted within a few inches of the glass in pits or frames in rows 6 inches asunder, and the same distance between the plants from centre to centre in the rows, and the same depth in the soil; an admixture of rather more than four parts loam and one of leaf soil, with a surfacing of Beeson's manure scratched in with the rake prior to planting, the same depth as they were in the pots. The planting should be done before the roots become matted round the edge of the pots, and the soil should be made firm about them, and then be watered to settle it around the roots. The plants must be slightly shaded from bright sunshine for a few days until their roots have pushed into the new soil, after which time full exposure to the sun and syringing overhead on the evenings of bright days will, in addition to a free circulation of fresh air being admitted to the plants by removing the sashes, be congenial to their requirements.

Plants thus treated are not only well established in their winter quarters and furnished with large well-ripened crowns, but actually produce flowers of the best description before those which had been planted in the ordinary way in the open at the same time had been even potted. By restricting root-action in the pot, together with proper treatment, good plump crowns are secured early in the season.

Marie Louise is the variety we grow under glass, and mainly out of doors, and there is none to equal it for floriferousness, size, and colour of flower, or hardiness of constitution. The plants must never be allowed to suffer from dryness at the roots, and they will be much benefited by being watered occasionally with liquid manure after clear water has been applied, and with some of the latter the plants should afterwards be syringed to wash the foliage. After the plants get well established in the pots and frames runners will push freely from their bases. Three of the strongest of these may be retained and the points immediately beyond the young plants pinched out, as also should all other runners as soon as they appear, so as to promote the formation of good plump crowns to supply a succession of flowers in early spring, by which time the floriferousness of the original plants will be on the wane.

To grow Violets successfully there must be no coddling of the plants, which would lead to failure; and in order to prevent the latter from damping during the winter and early spring months abundance of fresh air must be admitted during favourable weather, and water when necessary at the roots should be applied sufficiently early on a bright morning to allow of the foliage getting dry before night, when, except in the case of frost, which would necessitate their being covered with mats, a little ventilation being provided. Young plants or runners panted, as already stated, in south, west, and north aspects out of doors in rich soil, and subsequently attended to in the way of watering, thinning out of the runners, and the pinching out of the points of those left for the production of flowers immediately beyond the crowns of the miniature plants, will yield a long succession of flowers to those previously gathered from plants under glass.—H. W. WARD, Longford Castle.

THOUGHTS ON CURRENT TOPICS.

WHAT with one thing and another I shall soon have as much thinking to do as I can manage comfortably. Mr. William Thomson desires me to "prove" the "facts" about moisture passing from the atmosphere through the skins of Grapes, causing the fruit to split; Mr. Murphy invites my attention to the question of stem-roots on Lilliums, and the treatment of bulbs generally after flowering; and Mr. Gilbert seems to invite me to tell him how many "years" have elapsed since he ceased trenching—not for Broccoli, which would grow freely enough in the middle of Burghley Park if he were to stick them in, but as a means of increasing the fertility of the Marquis of Exeter's garden.

AS Mr. Gilbert is one of my esteemed friends he shall have my first and best attention. I cannot name the exact day of the month when the great master in the art of vegetable culture relinquished the "antiquated" practice, but I know when he won the Carter fifty-guinea cup and other good prizes he was diving deep down into mother earth in search of the

riches he found; and I know another thing, that some vegetables that placed Burghley second on a certain memorable occasion were not grown on untrenched land. That is not so many "years" ago, and it was "years" after that that deep, thorough, unmistakeable trenching was in progress at Burghley; but although I cannot name the date of Mr. Gilbert's recantation, I can, if needed, remind him exactly when I saw his good work in progress. He may have trenched enough. I say nothing about that; but he has been one of the best trenchers and best vegetable growers in England, and he knows as well as I do that he would not have done what he has if the field of his operations had never been worked more than a "spade deep."

I AGREE with him fully and unconditionally that the crowbar system of planting Broccoli is the safest and the best in districts where the winters are apt to be severe. My first lesson in planting in hard undug ground from which Strawberries had been chipped was received from a fine old Yorkshire gardener in 1850, and I have tried the plan carefully against a more generous method of culture time after time, and always, when the winters were unusually severe, the results were in favour of the hard land planting. As the Broccoli-planting season will soon be here the plan advocated may well be thought about with a view to its trial by persons who have not yet adopted it in localities where this valuable crop is liable to destruction by frost.

NOW for a few thoughts about Lilioms. I have grown these bulbous plants for many years and observed them closely. I go a very long way with Mr. Bardney (page 333) in his opinions, but am bound to come to a full stop when he suggests the removal of the roots as they are formed above the surface of the soil. I am inclined to believe that stem roots are not produced to any extent except the roots from the bulbs, cannot absorb sufficient nutriment for proper support of the plants and consequently of the bulbs, as an important and integral part of them. This means that in my view the presence of stem roots is indicative of weakness, and to remove them entirely the weak plant would be made weaker, and the plants so "assisted" would neither grow nor flower so well, while this very check to growth would have the correlative effect of checking also the extension of roots from the bulb, thus leading to a decided loss at the top and no gain at the bottom. "Very fine theory," perhaps same "practical" reader may soliloquise, "but not much substance in it." Let me say that when I find so-called "theory" clashing with practice I conclude the former is unsound; and what I have said above is founded on practice.

I HAVE read the excellent rejoinder of "Theta" to Mr. Bardney's observations, but I should have been more impressed with the argument on page 347 if "Theta" had told us that the strongest and best plants of *Lilium auratum* in Japan produce stem roots naturally and in proportion to the strength of the top growth from bulbs established in the soil. I can tell him as a fact that Lilioms have grown well and flowered beautifully supported wholly by stem roots and with the bulbs from which the growths started entirely removed; that in my mind settled the matter of the usefulness of stem roots, and had they been removed there would certainly have been no flowers. They were late and much-dried bulbs that did not produce a root from the base, and if those that bristled from the stem had been removed instead of being specially attended to the growths would have died instead of flowered, as some did from which a good extension of surface roots could not be coaxed.

REVERTING to strong, and in every sense fully supported plants, I have to say that the finest examples I have ever seen produced no roots above the soil. Some of the stems exceeded 4 inches in circumference, and the plants ranged from 6 feet to upwards of 9 feet high. One stem, not fasciated, but quite natural, expanded seventy-five blooms; one fasciated had above 100 buds and flowers crushed together, the whole collection planted out being quite wonderful by the vigour of the growth and the profusion and size of the flowers. I carefully removed the soil from some of the big bamboo-like stems to see if there were roots from them just below the surface, but not a fibre was found above the bulbs. There were no doubt plenty below them, and they were in the best of soil, with abundance of moisture, which was constantly passing upwards by capillary attraction. That is exactly what Lilioms, if not all bulbs, like, and the reason why Hyacinths, &c., grow so well in Holland is because the sandy soil in which they are planted is, as it were, floating on water, which the bright sun is always drawing upwards to the roots. My thought, then, on the matter of the roots produced from the stems of Lilioms is that they are mainly adventitious, of great service when they come, but that they do not come if not wanted for the full and adequate support of the plant and future bulb; and, as a rule, they are much more prevalent on plants with their roots cramped in pots than on those planted out and growing strongly in suitable soil in the open air. To continue would be tedious. If I think of it I will on a future occasion refer to what I conceive to be the best method of preparing dry *Lilium* bulbs for planting, also the best time for potting those that are established, as I am convinced the plan pursued by many gardeners is utterly wrong. The whole question of bulbs after flowering is important, but too large to be entered on with the Thomson problem before me.

I AM asked to "explain how I prove it to be a settled fact that moisture passes from the atmosphere into fruit and causes splitting." I said "in my view" that fact is settled. I will try and explain it, and if perchance I should learn Mr. Wm. Thomson something, I shall be

pardoned for feeling it will be a "feather in my cap," and some slight return for much that I owe to his practice and teaching—ten times more than I do to Mr. McIndoe, whom I may appear to support. It is not a question, however, of "supporting" anyone, as I take it we are all honestly searching after truth.

CURIOSLY enough the same paper (April 23rd), in which I ventured to suggest that Mr. Thomson would have some difficulty in disproving what, in my view, was a fact that the splitting of Mr. McIndoe's Grapes at Manchester was caused by the transmission of moisture from the atmosphere into the fruit—curiously enough, I repeat, the same paper contained Mr. Thomson's estimate of the cause, and his disproof of my view in anticipation. His answer was clever. It was impossible to attribute the evil to an influx of sap from the roots, which were about 100 miles away, so that fact is settled; and the splitting was attributed to the expansion of the fluids in the fruit in consequence of the high temperature. This is illustrated by the excessive heat, 110° in the shade, in the show tent at Leicester; but we must remember that the Grapes split at Manchester, not at Leicester, and if the meteorological records are examined it will be found that the heat was by no means great during the week commencing August 24th, 1881, the period of the Manchester Show. There was a rise in temperature, but not so great as even Mr. McIndoe imagines, and not nearly so marked as has occurred on many other occasions in vineries when the fluids did not expand to split the fruit. It was, in my opinion, no more the expansion of fluids in the fruit that caused the Grapes to split at Manchester, than it was the expansion of fluids in the Grapes at Clovenfords when the gimletting prevented the evil by arresting the supply of moisture from the roots.

I AM compelled to re-assert, for I can rest on no other principle, that the Grapes really did "glutton-like absorb more moisture from the atmosphere than they could hold." I do not say they did this of their own "free will," for they had no will in the matter; they did so because they could not help it, and in obedience to a law of Nature—the "equilibrium of densities," scientifically known as the principle of osmosis. I can find no other firm ground than this to stand on in considering this important matter.

I WILL, however, proceed a step further in explanation of what I believe to be a fact. I have previously stated that Melons and Tomatoes cut and placed in a moist position in a warm plant stove split, and were ruined; but when placed immediately over the hot-water pipes where the air was dry they did not split. Yet it was many degrees warmer, and the fluids did not expand, and in that way cause splitting. I have had scores of Tomatoes crack in a moist atmosphere, but I believe it is not possible for them to do so in a dry place in a temperature of even 120° in the shade, for under such conditions they will shrivel, and so will Grapes. The "fact" I advanced of Grapes absorbing moisture is therefore as clear to me as the fact of Mr. Thomson stopping his Grapes splitting with the gimlet is clear to him. I can understand there may be no escape of moisture from the gimlet holes when the Vines are in leaf, for they may be pruned then to any reasonable extent without bleeding; but I cannot understand their splitting in a hot dry place by the expansion of fluids, and I have yet to be convinced that it is in the power of man to make them split in that way without cooking them.

MOISTURE not only passes from the atmosphere through vegetable but also through animal membranes, the thinner fluid in the air being attracted by the denser fluid in fruit.

MONS. DUTROCHET found that if he filled the swimming bladder of a carp with thin mucilage and placed it in water, the bladder gained weight by attracting water through its sides: to this phenomenon he gave the name of Endosmose. He also found that if he filled the same bladder with water and placed it in thin mucilage, it lost weight, its contents being partially attracted through its sides into the surrounding mucilage; this counter phenomenon he named Exosmose. The same circumstances were seen to occur in the transmission of fluids through the tissue of plants; it was found possible to gorge parts of vegetables with fluid by merely placing them in water, and to empty them again by rendering the fluid in which they were placed more dense than that which they contained. It was also ascertained that this phenomenon took place with considerable force: Dutrochet says that water thickened with sugar in the proportion of 1 sugar to 2 water, was productive of a power of endosmose capable of sustaining a column of mercury of 127 inches, or the weight of 4½ atmospheres. When organic tissue dies it does not lose its mere hygrometrical power, nor do its tubes cease their capillarity; for endosmose will take effect through dead membranes, as is proved by the instrument called an endosmometer. Dutrochet considers endosmose to be owing to what he calls intercapillary electricity, grounding his opinion partly upon the experiment of Porret, who found that when two liquids of different levels are separated by a membrane, they may be brought to a level by establishing an electrical current between the two, thus rendering the membrane permeable; and partly upon experiments of his own. But M. Poisson, on the contrary, has demonstrated that endosmose may be the result of capillary attraction joined to differences in the affinity of heterogeneous substances.—(*Ann. de Chim.*, 1827, v. 35, p. 98.) Time flies, paper fills, the midnight oil burns low, or more evidence on Grapes absorbing moisture through their skins could be adduced by—A THINKER.



It is our intention to give as full a report as possible of the ORCHID CONFERENCE that is to be held at South Kensington on Tuesday next, and Mr. Veitch's paper on the Hybridisation of Orchids will be copiously illustrated by woodcuts specially prepared by us for this Journal.

— THE name of the winner of the Lord Lieutenant's cup for Hyacinths at the Spring Show of the ROYAL HORTICULTURAL SOCIETY OF IRELAND should have been Shapland M. Tandy, Esq., of Clarinda Park House, Kingstown, not as printed in last week's Journal.

— WE have received a flower of the distinct and beautiful hardy Passion Flower, *PASSIFLORA CONSTANCE* ELLIOTT, for which Messrs. Lucombe, Pince & Co., Exeter, were awarded a first-class certificate by the Royal Horticultural Society last May. It is like the common *P. cœrulea* in form of flower, habit, and hardiness, but the petals and fringe are pure white, the styles alone being yellowish. The fragrance is delicate and pleasing.

— MUSHROOMS IN FIELDS IN MAY.—“J. W., *Pershore*,” writes, “Just a line to say that a friend of mine six miles from here has been picking this last fortnight out in his fields several pot hampers of grand Mushrooms.”

— MR. BARDNEY wishes to thank “F. B.” “for sending spotless blooms of Tea Roses that had been subjected to the softsoap solution I have frequently recommended in these pages. I am the more pleased because your correspondent offers no remarks, but leaves the condition of the blooms to the opinion of the editor. I have only to add that if the solution is used as recommended no injury will be done to the most delicate blooms. The foliage by its use will be improved, and this alone pays for its use, to say nothing of its value as a preventive against mildew and insect pests. I have no doubt whatever that when the system I have recommended becomes more generally known and is properly practised that many proofs of its value will be forthcoming.”

— MR. W. HAWLEY, Ask, Aldershot, sends us a most welcome and beautiful collection of SPRING FLOWERS, comprising some charming varieties of Alpine Auriculas, Polyanthuscs, Pansies, and hardy Primulas as bright and fresh as if but just gathered. In each case the colours of the varieties are very rich and varied, and represent strains of great excellence.

— “W. B.” writes:—“It would be interesting to know if *CÆLOGYNE LEMONIANA* flowers naturally from the same pseudo-bulbs twice in one season—that is, from the top in autumn and again in early spring from the base, the same as *C. cristata*. A large panful of this charming *Cœlogyne* does this annually under the charge of Mr. Davies at Woolton Wood, Liverpool. Perhaps some of your readers can say if this is natural to this variety or due to the instance cited to superior cultivation. It is worth a place in every collection if it is its nature to flower only once, but if twice, it is doubly valuable, especially to all who require choice flowers in quantity.”

— THE same correspondent states:—“In addition to the value of *RHODODENDRON JACKSONII* for early forcing in pots it is charming outside just now, and would form one of the most delightful spring beds imaginable. In many gardening establishments these early-flowering varieties are not accorded such a prominent position as they deserve. No doubt they are very liable to injury from spring frosts, and sheltered positions should be selected for them. They are the most effective when whole beds are planted with the same variety and not mixed, as is too general. When a bed is formed of one variety they are so beautiful and effective that they more than repay the trouble and care required in protecting them from spring frosts by means of canvas, which can be placed over them and taken off in a few minutes.”

— “AN ENTOMOLOGIST” writing from Gravesend respecting the SEASON AND INSECTS observes:—“From my own observations and the statements made by gardeners and farmers hereabouts, I am inclined to think we shall have a season remarkably free from many forms of insect

blight. The reason hereof is the fine dry March succeeding a moist February. By the latter numerous hibernating species were killed, and during the former (and the early part of April) hosts of caterpillars died off quite young.”

— ON Saturday, May 9th, the ESSEX FIELD CLUB will have an excursion to the Deneholes, near Grays Thurrock (in conjunction with the Geologists' Association. Directors:—T. V. Holmes, F.G.S., and William Cole, Hon. Sec. E.F.C. On Saturday, May 16th, a visit will be paid to the Gardens of the Zoological Society of London. Director:—Prof. W. H. Flower, LL.D., F.R.S., F.L.S., &c., President of the Zoological Society. Visitors will assemble at the main entrance to the Zoological Gardens in Albert Road, Regent's Park, N.W., at about three o'clock. Members will be admitted free at the above-named entrance on signing their names in the book.

— THE INTERNATIONAL INVENTIONS EXHIBITION at South Kensington was opened on Monday the 4th inst. by the Prince and Princess of Wales, a large number of distinguished visitors assembling to witness the ceremony. During the afternoon the public were admitted, all the principal parts of the Exhibition being crowded until closing time. Several galleries are well filled, and there is abundance to interest visitors, but much more remains to be done, and several weeks must elapse before it is completed. At present the horticultural department is but scantily represented, but agricultural implements and machinery are more numerous, occupying considerable space in one of the large galleries near the entrance. We shall have occasion to refer to the exhibits on another occasion, and for the present we may remark that Messrs. Foster & Pearson, Chilwell, have samples of their green-houses, frames, valves, and boilers; Mr. Sam Deards, Harlow, has a house illustrating his method of dry glazing; and Messrs. Arthur Dashwood & Co., Wimbledon, exhibit several houses. The floral attractions comprise groups of hardy plants from Mr. T. S. Ware; Rhododendrons from Messrs. Lane & Son, Great Berkhamstead; and a handsome tent of Roses in pots from Messrs. Paul & Son, Cheshunt. The galleries have been differently arranged, but the garden space has not been decreased, and this now looks very fresh and neat. The musical attractions are as numerous as at the two preceding exhibitions, and there is every reason to anticipate as much success for the “Inventories,” as rewarded the promoters of the “Healtheries” and the “Fisheries.”

AMONGST THE ORCHIDS.

DOWNSIDE.

In the *Cattleya* house at Downside, to which some reference was made last week, a simple but effective means of protecting the plants from the attacks of such enemies as slugs, snails, and cockroaches is adopted, and so satisfactory has it proved that several orchidists have been induced to try the plan. It is especially applicable to the central bed or stage, and for this it is employed at Downside in the following manner:—The stage is supported upon a number of iron pillars, which pass through the centre of a metal saucer about 6 inches in diameter and an inch or two in depth, and are kept filled with water. These may be cast with the pillars, but where there are similar supports and it is desired to add such insect traps to the existing arrangements, it can be done in the manner adopted at Burford Lodge—namely, pieces of zinc or galvanised iron cut to a suitable shape and size can be readily soldered round the pillars, answering precisely the same purpose and with less expense. Beyond the use of these saucers for excluding or catching insects they are advantageous in affording a constant supply of moisture at the lower part of the stage, which, rising amongst the plants, keeps the foliage fresh and healthy.

Another very suggestive and important practice at Downside is the employment of large beds of leaves beneath the central stage. It has been a question amongst orchidists for a considerable time whether Orchids are benefited by the gases arising from decaying vegetation, which has been answered both in the negative and the affirmative, both its supporters and its opponents having had some truth on their side. As in many other matters the right course appears to be the intermediate one, for though the plants dislike the products of rapid and offensive decay, they seem to gain some advantage from a more gradual change which releases the various gases slowly. A few cultivators have argued that ammoniacal vapours are beneficial, and one has recommended the employment of carbonate of ammonia for this purpose; but it must be regarded with considerable doubt, and any experiments should be conducted most carefully, or serious results might accrue. At

Downside a bed of leaves is formed over six rows of 4-inch pipes, being separated from them by a closely meshed wire netting, beneath which is a tank extending under the greater part of the bed. From such an arrangement one very great advantage is obtained—namely, a constant and liberal supply of moisture from beneath, and with free exposure to sunlight above, we have a near approach to the natural conditions of tropical climates. The plants evidently enjoy their treatment, growing strongly, flowering profusely, and generally giving abundant proofs that they are flourishing most satisfactorily.

To accommodate the large numbers of *Odontoglossums* grown at Downside an excellent house has been erected; and here it may be remarked that the majority of the new houses have been constructed by Messrs. Boulton & Paul, and the admirable manner in which the whole of the work, to the smallest parts, has been finished is most creditable to them. The *Odontoglossum* house is span-roof, 100 feet long, and 12 feet wide, with a stage on each side, but without any central pillars, thus presenting an unobstructed view from one end to the other. Beneath the stages extending the whole length are open tanks into which runs all the rain falling upon this and the *Cattleya* house, a communication with the tanks in the *Cattleya* house being so arranged that the water flows into them after passing into the *Odontoglossum* house tanks. The rafters of the roof are so glazed that a space of about quarter inch is left at the base of each between the glass and wood, thus ensuring constant ventilation, but in very severe or windy weather these apertures can be closed by shutters, though this is rarely resorted to. All the rafters are grooved to prevent the condensed moisture dripping on to the plants, and thus one fertile source of failure with "cool" *Orchids* is removed. A very fine selection of varieties of *O. Alexandræ*, *O. cirrhosum*, *O. Pescatorei*, *O. Wilckeanum*, and many others are grown, producing their charming flowers in profusion, and rendering the house devoted to them one of the most pleasing in the establishment, and in the white or delicately tinted blooms form a striking contrast to the rich *Cattleyas* in the adjoining structure. Hundreds of *Masdevallias*, representing all the section of this large genus, occupy a house 50 feet long, and with the numerous other plants in the celebrated Downside collection satisfactorily testify to Mr. Woolford's skill as a grower.—L. C.

DUKE OF BUCCLEUCH GRAPE.

MR. THOMSON does not offer a good defence of his gimlet practice to prevent splitting. I thought it was obvious that I was aware Vines did not bleed when in full growth, and your correspondent must misunderstand me. What I say and have said is that, if the berries split from an excess of moisture drawn up through the stem, one "would naturally expect the sap to run out at the hole made for its escape." But this does not happen; hence the cause assigned cannot be the right one. Mr. Thomson says that moisture in excess causes the splitting, and he taps the shoot below the fruit to draw the moisture off. If this is not his object what is it, and what becomes of the moisture that is diverted from the bunch? The gimlet hole cannot cause the leaves to appropriate more than they need, the moisture does not escape at the hole; the ascent of the sap is not arrested. What, then, becomes of the spare water?—DUKE GROWER.

EUCHARIS CULTURE.

IN ANSWER to the question of "Eucharis" as to the size of my hot-house, it is 15 feet by 12 inside, lean-to. If no flower-stalks appear on his plants, I suggest that he should keep them without water for a month or so, and wait the result. Let me in return ask him another question—How long have his plants been in 14-inch pots? If he has been "growing them on," as they say—that is, giving them a shift into pots a size or two larger at short intervals, he will get no bloom worth mentioning. They must be cramped in their pots. My gardener declares that "the new foreman" is the person responsible for *Eucharis* not flowering. The intelligent young man (all new foremen are "intelligent" as surely as all new *Roses* are "magnificent") finds a plant that has seldom or never flowered. "He will soon alter that." So it is given a liberal shift into a compost of as many ingredients as my grandmother's herb drinks, and he triumphs when leaves as big as *Rhubarb* make their appearance. But the flowers will not show, and at last his superior is informed that "They have got the non-flowering variety the same as they had at his last situation," and perhaps other plants are procured; but somehow or other the free-flowering variety never turns up; while if he had been content to leave the plants alone he might have been well rewarded for waiting.—DUCKWING.

A REMARKABLE GOOSEBERRY BUSH.—On the wall of my garden a *Gooseberry* bush has been growing for some years. At the present moment it is laden with fruit. Its root seems to be between two bricks, and I cannot conceive why it should always be the first fruit-producing bush in the garden, as there seems no way in which it can derive nourishment.

There is no appearance of roots below the bricks, and many gentlemen who have seen it consider it a rare specimen of a freak of Nature.—EDWARD CLARE, 7, Leabridge Road, Leyton, Essex.

MANURES.

[The following paper was read by Mr. Kruse, of Yew Tree Farm, Leeds, at a recent meeting of the Leeds and Broomfield Mutual Improvement Society.]

THE subject of manures is one of chief importance, not only to farmers and market gardeners, but to everyone who grows fruits, vegetables, or flowers, for it means supplying these with their necessary food. To grow plants well suitable food must either be originally present in the soil or must be supplied by means of manure. We must first of all consider what plants take out of the ground and consist of, so as to know what to supply to them, and I will try to explain this as simply as possible, and hope to do so in such a manner as you will understand. The five principal food elements plants use are phosphorus, nitrogen, potash, lime, and sulphur, the importance of them being according to the order in which they are given, and the first three being considerably the most valuable. There are other substances, such as iron, magnesia, soda, silica, &c., which are required by plants, but which we may generally ignore, as they are probably either already present in the soil, or are supplied along with other manures. We will now consider those that are actually required, and we must provide our plants with all of them if they are to be healthy and to be profitable, for even if one is deficient and there is plenty of all the others, the plant will not flourish, nor will the other things which have been supplied be able to be used as they should be, and so they will be partly wasted. It is the same with ourselves and our own food. Suppose we eat plenty of food which makes flesh and keeps us warm, yet if we do not eat food which makes bone as well we shall not be strong and healthy, and will suffer from various diseases. To return to our subject. I prefer to commence with nitrogen. This is supplied in ordinary farmyard dung, which also supplies phosphorus and potash, so that you can see why dung is so generally preferred, because it supplies the three most necessary things, besides others as well. But it does not supply enough phosphorus for all crops, because the bones of the animals are not included with their excrement. Therefore more phosphorus should be added in the form of bones or otherwise; but this we will consider presently. Guano is a good manure for supplying nitrogen, as it also supplies phosphorus (but not potash). Fowl dung and pigeon dung are also rich in both nitrogen and phosphates. Liquid excreta contains a large amount of nitrogen, and also potash. It is not generally known that the liquid manure from an animal is worth more than the solid; also, a ton of cow liquid is worth double as much as a ton of farmyard dung, while a ton of horse liquid is worth double that of the cow. If this liquid is used by itself as a manure, it should be mixed with at least six times as much water. It is a good plan to mix it with dry earth or ashes. When dung is left out in heaps exposed to the weather it will lose a great part of its value. If we pass by such heaps after a heavy rain we find a dark brown liquid has come from them. This contains some of the best part of the manure. If dung is stored in the open it should always be covered with boards or thatched, or at least ridged up and plastered with earth. Loose earth should also be put underneath to soak up any liquor which may drain out. This will be worth as much as the dung. Manure from stables if left in heaps is apt to become heated and firefanged. This means that the principal part of its value has gone into the air, and such manure, when compared with dung which has been trodden and soaked under by animals, will be found to give a poor result. To prevent firefanging the heaps should be turned several times and moistened a little; if with animal fluid all the better. Horse manure prepared in this way is then very valuable.

All growing crops and all sorts of vegetable refuse contain nitrogen besides potash and phosphates; therefore all these should be carefully preserved and dug in, wherever practicable. If burnt all the nitrogen is dissipated into the air, and only the potash and other minerals are left. The brushings of hedges, which will not rot, and twigs are better burnt, for if dug into the ground they engender fungus. There is a certain amount of nitrogen always in the air in the shape of ammonia, which the leaves of plants drink in, so that by digging a crop in as manure we put back into the ground more than we took out. It is much more profitable to have the ground covered even with weeds if they are afterwards dug in than to have it bare; for the leaves not only absorb nitrogen from the air, which will manure the following crop, but their roots also take up much nitrogen that would be washed out of the soil by the rain, if the ground were bare. Fish, flesh, blood, seaweed, rapedust, and soot all supply nitrogen; so also do flock dust, wool waste, feathers, skin waste, horns, hair, and rags, but these do not supply anything else, so that phosphorus and other minerals have to be altogether supplied in other ways. The same may almost be said of nitrate of soda and sulphate of ammonia. These act much quicker than what are called waste product manures, such as skin waste and the others mentioned above; but the waste products do not get washed out of the ground so easily by the rain, and last longer, and also encourage worms which are a great benefit to the soil, so for my own part I prefer them to chemical manures. But we must not forget that these waste products and nitrate of soda, &c., only, or almost only, furnish nitrogen; and anyone giving their crops these is only giving them one article, whereas they want several, so that unless these others are naturally in the soil the plants cannot do well, and if they are partly in the soil it is robbed and made poor. Indeed, were giving nitrogenous manures alone persisted in the soil would become exhausted of its phosphates and would become partially barren.

Generally speaking giving nitrogen makes a growth of leaves; that is why too much given to corn will make the straw too long, or to Turnips will make too many leaves, and the bulbs will be small, while giving phosphates produces flowers and fruit. Phosphates impart quality. While speaking of nitrogen I mentioned that the leaves of plants absorb it in the form of ammonia to a certain extent from the air, and the soil also absorbs it to a small extent, especially when there is a fine crumb on the surface. Rain and snow also contain it, and so bring it to the roots, but mineral food—i.e., phosphorus, potash, lime, &c.—must be in the soil, as they cannot be drawn from the air. So that you see how much

more important phosphorus is than nitrogen, because while phosphorus must be in the soil for vegetation to be healthy, nitrogen is furnished by the air as well as the soil, and plants are not absolutely dependent upon it being in the soil. Are we then to conclude that nitrogen is not needed because it is furnished by the air? No. We must not allow ourselves to swing to and fro like the pendulum of a clock. If we want to raise heavy crops, and plenty of mineral food is supplied, the nitrogen obtained from the air will not be sufficient, so more must be furnished or the plants will not be able to avail themselves of the abundance of phosphorus and other minerals. Now while rain is a source of nitrogen, yet on the other hand it is a cause of loss of it, especially when the ground is bare. Now, nitrogen is easily washed from the soil too deep for roots to reach it, but phosphorus and other minerals stay better in the soil, so that if we give more of them than is required, they are still there, and can be used by other crops. Our soil here on the ragstone formation naturally contains a good supply of phosphates, and that is why it is so suitable for Hops and fruit, and is so fertile; and my own belief is that where finer Hops are produced than here, it is because there are more phosphates in the soil, and where poorer Hops, such as in the Weald of Kent, it is because the soil is not so rich in phosphates. The same applies to fruit. It is obvious that it is only the soil which makes the difference, for the air and climate are the same. Therefore to make our produce of equal quality, we must make our soil as good.

To come from theory to practice. A firm in Maidstone from whom I bought some crushed bones, informed me that a Hop grower had applied bones (which contain a very large amount of phosphorus) to his poorest piece of Hop garden, with the result of getting the best Hops from it, and they were of such fine quality that they were eagerly bought up by the brewers at Burton. He has since then increased the quantity of bones he buys each year, and this winter has purchased of them 40 tons of crushed bones, amounting to over £300. Fruit also benefits largely by phosphates where used, the produce being both greater and of finer quality. The wood of the trees is firm and full of blossom buds, and gets well ripened, in contrast to the large coarse growth producing nothing but leaves, caused by excessive supplies of nitrogen alone. When phosphates are supplied as well as nitrogen, I have found there has been an abundant growth of wood, yet of good quality and of fruitful habit of growth. I attribute this result as well, partly, to not disturbing and breaking the roots. I believe much blossom never sets, or the fruit drops off prematurely, because of lack of phosphates in the soil. The reason is the trees find they cannot sustain the fruit, for they have not got sufficient food for it to grow to perfection. To leave fruit and Hops (in which, no doubt, you are interested, as your work lies so much among them) for garden crops, we find that phosphates are very beneficial to Turnips, Cauliflowers, Cabbages, and, in short, all garden crops, for this reason, that they all contain a very large amount of phosphorus, and that unless it is in the soil they cannot come to perfection. Turnips will not grow well without a good supply of phosphates, and this is the reason superphosphate is so much used for them in farm cultivation.

These things being so, it remains to be considered how the phosphates are to be supplied to our various crops. They may be given by means of dung, as mentioned under nitrogen, but not in sufficient quantity in an ordinary dressing; therefore should be given separately in addition. Of course, if we were to use sufficient dung we could give enough phosphorus even to those crops which require most, but this would be a very wasteful proceeding, for to give enough phosphorus we should have to give too much nitrogen, which would be wasted, and to some crops would be very injurious. Fifty, seventy, and eighty tons of dung per acre are sometimes employed by market gardeners near London, and also in America, and I have read of 100 tons an acre being sometimes employed in a garden near Bermondsey. In my humble opinion, very heavy dressings of dung are a mistake, and the same result would be achieved much cheaper by a moderate quantity of dung, and by adding in other ways more phosphorus and also other minerals if required. As you will have seen from what I have said before, bones are very rich in phosphates, more than half of their weight being tri-calcic phosphate. The smaller they are broken the quicker will be their action, as there is more surface for roots to attack. If a good dressing, say at the rate of a ton an acre, of half-inch or quarter-inch bones were given, it need not be repeated under seven years; but if the bones were crushed to dust, a smaller quantity, say a quarter of a ton per acre, would be sufficient, but would have to be repeated oftener. Bones also contain some nitrogen. If we had to depend on bones alone for our additional phosphates, there would not be sufficient, or the price would rise so as to be prohibitive, but happily phosphates are dug out of the earth in England in the form of coprolites, and in the mineral form in various other places.

The mineral phosphates may be bought ground up finely, ready for use, and are cheaper than bones. Superphosphate is mostly made of minerals, but may be had made from bones. The bones or minerals are dissolved by having sulphuric acid or vitriol poured over them, and some suppose that by being dissolved in this way they act much quicker; but in practice it is found that if the bones or coprolites be finely ground they act almost as quickly, and are much cheaper, besides which the sulphuric acid is apt to do the ground harm by making it too acid, and make Turnips, &c., more liable to disease. Night soil is rich in phosphates, as also are fowl dung and guano, as I mentioned before. Guano at the present time mostly contains more phosphates in proportion to its ammonia than it used to, for the highly ammoniacal is getting used up. There is also a fish guano, called Jensen's Cod Guano, manufactured from the heads and backbones of codfish, which contains a high per-centage of phosphates. They also make another from herrings, which, however, is not so rich in phosphates. I think we have said enough about phosphates, and we will now pass on to potash.

All plants take large quantities of potash from the soil, and it is therefore quite as important in that respect as phosphorus; but there is this difference, that while nearly all soils require phosphates to be supplied, a great many soils have such an abundance of potash in them that they never require it to be supplied as manure. Other soils have scarcely any, so that you see, before giving it, it is necessary to see if it is wanted. Most clay soils never need it to be supplied, and I do not think our soil does. Last season I experimented with a small quantity of different trees and vegetables, but could not see any benefit where it was put on; even Potatoes, which require a very large quantity of potash, were no better in crop where it was

used, than where it was not. Last summer was very dry, which might have prevented the crops having the full benefit of it, and therefore I cannot fully judge until after this summer. Also where Potatoes have been grown continuously on the same ground for a number of years, on this soil they may need potash. Light soils mostly require potash. Apples, Plums, Pears, Grapes, Cherries, and indeed all fruits take large quantities of potash from the soil, the ashes of those mentioned consisting of half their weight of potash. Potatoes, Rhubarb, Beans, and French Beans the same; while Peas, Celery, Onions, Cabbages, and other crops also consume a large amount. Potash can be supplied by dung and decayed weeds, or any vegetable refuse. Wood ashes are very rich in potash, as also is the animal fluid. Potash can be added to the soil as kainit and nitrate of potash. On those soils where it is deficient it must be added, because then it is as necessary as nitrogen and phosphorus, and if added will greatly increase the crop.

Lime is the next element on my list. All plants are composed partly of lime, and therefore need it in the soil, but whether it is necessary to add it to the soil is a debated point. Professor Jamieson and others are not in favour of it, but many say that it is necessary. Probably both are right, and that, like potash, it depends whether it is naturally present in the soil. Heavy soils are considered to be improved by a good dressing of lime or chalk, not only by the lime being added as food for the crops, but also because it makes the soil easier to work, and drier, and therefore warmer. It is generally supplied either as lime or chalk. If I were near the pit, I should put on chalk, but if at a distance I should use lime, because otherwise the carriage would come to so much, for 5½ tons of lime are equal to 10 tons of chalk. Lime may also be added to the soil as marl. Bones and gypsum are partly composed of lime, so that when they are used a certain amount of lime is given by them. Lime should not be used when the soil does not contain much humus or vegetable mould, as it dissipates this which is necessary for plant life. Chalk is better to use in this case if calcareous matter is required. But where the soil is black with humus, as in old gardens that have had heavy coatings of dung and are full of decayed vegetation, lime is very often highly beneficial, sweetening the soil and rendering this black mould fit for the use of plants, other manure then not being required for a time. As our own soil is composed of the *débris* of Kentish ragstone, which is a limestone, it is an open question whether lime is needed. When roots are "clubbed," or as some say have "finger and toe," it is considered a sign that chalk or lime is required, as the absence of it will cause this disease, and it has also been found a cure for clubroot in Cabbages. It has been said that when water and couchgrass prevail, it shows that calcareous matter is required. Were I living on the Weald clay, or "below the lill," as it is called here, I should certainly use lime, and should not expect to grow good crops of fruit without its use.

So much for lime, let us now consider sulphur. This is absolutely necessary for plants, but whether it is required to be specially applied as a manure is a different thing. Some hold that it may be ignored, I suppose because sufficient is present in the soils where they have made their experiments. Nevertheless it has been used as a manure, with the result of a considerable increase of crop in the case of Cabbages, Turnips, Clover, Peas, Beans, and Grass. Cabbage contains a very large amount of sulphur. The best way to apply it, specially as a manure, is by means of gypsum, which also consists largely of lime, so that is given at the same time. Benjamin Franklin sprinkled letters of his name with gypsum on a piece of Clover, the result being that his name could be afterwards read, on account of the increased growth of the Clover. It is considered to have the best effect if used when the leaves are wet, so that it sticks to them. It is said by some that using gypsum on Hop gardens checks the mould, and I should think it would perhaps prevent mildew in other plants, such as Peas. I am trying the effects of it this year on various garden crops, and on fruit trees, to see if they derive any benefit from it. If used, it is better not to give too heavy a dressing at one time, as it is washed out of the soil by rain. Of the other substances which are present in plants, such as magnesia, soda, iron, &c., and which agricultural chemists say may generally be ignored, I will say nothing except to remark that to some crops soda has been found very beneficial. It may be given cheaply by means of common salt, which is largely composed of it. Last year my Strawberries derived considerable benefit from an application of nitrate of soda and phosphates, and I believe it was owing partly to the soda, which enters very largely into the composition of this fruit. Cabbages, Turnips, and Mangold Wurtzel also contain a large amount of soda in their composition. Salt is much used for Asparagus. It has been found that when Turnips and Mangold Wurtzel have been manured with salt, in addition to other manure, that good crops have resulted in very bad years, when insects have carried off half the produce on adjoining farms. One farmer states "he has never known the Turnip crop to fail where he has used it." Salt has been found remarkably useful for getting rid of couch and water grass. It should be applied in autumn to land intended for fallow at the rate of 12 cwt. per acre.

There is one more substance which I should like to speak of, and that is humus, which I have incidentally mentioned before. It is the black mould of soils, and is the remains of vegetable and animal matter. Gardens which have been well manured usually have plenty of it; but farm soil, which has had vegetation taken off it for a number of years, and not much dung or green stuff ploughed in, will be sure to be deficient in it. There is another benefit of dung and waste product manures over chemical manures such as nitrate of soda, &c., and that is, that while both supply nitrogen, the former supply humus as well. Green crops dug in also furnish a supply, and on soils deficient in humus all vegetable matter should be saved and put on the ground. Mr. Dean says, if a crop of Clover be grown and ploughed in when it begins to flower, it will give to the soil four times as much humus as it took out, and any vegetation grown and dug in will act in the same manner. You will see the difference humus makes to the soil if you compare the soil of an old fruit plantation with that of an arable field adjoining, and which it was once part of. You will find the soil of the plantation much darker and more friable through the leaves which have fallen from year to year. Humus attracts moisture to the soil and retains it well. It also helps to dissolve the phosphates and other minerals in the soil, and render them fit for use by plants, and is beneficial in other ways. On the other hand, there is no benefit in having too much of it, and there may be more than is required in old garden soils. Such are benefited by a dressing of lime, which will render it fit for use by plants, as I said before. I should think

that your gardens here have sufficient humus, but that your allotments, and the fields round here where the soil is inclined to be red, would be benefited by more being added to the soil.—(Kent County Standard, April 3rd, 1885.)

THE INSECT ENEMIES OF OUR GARDEN CROPS.

THE CAULIFLOWER.

INSECTS there are, feeding upon sundry vegetables, whose small size renders it no wonder that they escape the eye of the gardener, and pass through the hands of the cook also unobserved, to find themselves placed upon the table with some vegetable that is to be eaten raw, when they may perchance be swallowed alive by an unconscious member of the British public, if not detected by him with disgust. Others of larger proportions, however, that may be haunters of vegetables which are cooked before they are eaten are, by accident or carelessness, not always removed; but as it happens the processes of boiling or baking generally bring their bodies into such a condition that they are unnoticed, though it is not pleasant to observe the horny head of a caterpillar upon one's plate, a pretty sure sign that the rest of his carcase has been combined somehow with one's food. And I have known persons, with an almost Hindoo dislike to swallowing insects, who repudiate Cauliflowers and Broccoli because they are very apt to contain the bodies of lurkers of the caterpillar race, which have fed securely, deep in the heads. Some persons, again, tell you philosophically that caterpillars (and other insects) taste of the object upon which you discover them, but no one who has bitten a centipede when in the act of eating a Pear or a Peach will be much inclined to uphold such a theory.

With both the above vegetables, which are in greater request than ever, the moderns of the most part being quite of the opinion of old Gerarde, that "cole-floury," as he calls it, decidedly surpasses its brethren of the group, be they sprouts or full grown Cabbages; the grower is presumed to do his best to keep them free from insects for his own sake, apart from that of the consumer. Yet in various gardens I frequently perceive that

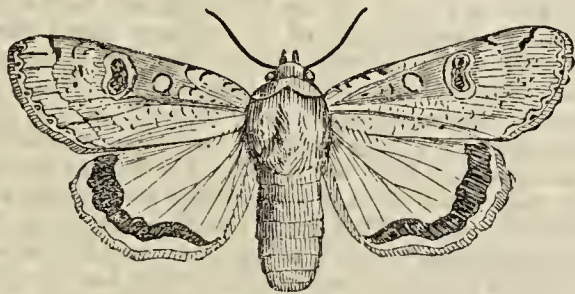


Fig. 66.—*Triphaena pronuba*.

these and other Brassicas are somewhat neglected, because they are common or thought to require little care. This is a pity, since it occasions present loss; possibly another season, through multiplication of insects, a greater loss. Besides, owing to the migratory habits of many species, by leaving them untouched on any plant whatever, we are running the risk of after attacks upon produce which is of special value and importance.

To some extent Cauliflowers are liable to the visits of nearly all the insects that live or feed upon the cultivated Brassicas; but the mode in which they develop their heads offers an opportunity for a concealment which caterpillars of several species particularly like (as they also do the close Cabbages), so they entering while they themselves are very juvenile, and from their size and colour scarcely discernible. Then having travelled towards the centre of the head they need fear no disturbance, for they are unseen, and the attacks that are made by them upon the vegetable are so managed as to give very little indications of their presence. When adult, should this stage be reached ere the Cauliflower is cut, the caterpillar often succeeds in getting out unobserved to assume the chrysalis state. There are, however, one or two species that pursue a different plan, weakening a Cauliflower or a Cabbage by gnawing the base of the stem or nibbling the roots, they, as they increase in size, quit the earth in which they have been hidden during the daylight, and at evening ascend the plants, eating their way in from below. Afterwards, though not invariably, they return to their retreat beneath the soil till hunger and darkness call them forth again. The caterpillar of the great yellow underwing (*Triphaena pronuba*) is a far too common insect in gardens, but its presence in spring Broccoli heads and also in early Cauliflowers is seldom suspected. Eggs are deposited by the parent moth (very noticeable for its propensity of entering rooms or public buildings and dashing wildly at the lights) upon a number of low-growing plants; the caterpillars, however, soon make their way beneath the soil to feed upon root fibres first, hatching out during August usually. The autumn, therefore, is a good time to attack this insect, by

the distribution of gaslime or soot between the rows, or by watering freely with ammoniacal liquor, quassia water, and similar liquids destructive to caterpillars. Lying more or less dormant until the spring, these caterpillars then have a liking for the heads or hearts of any Brassicas that are accessible, and feed upon them until the pupal state is entered at the end of May. Each caterpillar forms a cocoon some inches deep in the earth, the moth emerging in two or three weeks. This insect, though apt to vary in its colour, being yellowish, green, or brown, is lighter in tint than the excessively abundant caterpillar of the Cabbage moth, and down the back there runs a yellow stripe, bordered each side by a dark line; and across the body are several rows of black marks or dots. The skin generally has a velvety look, and if alarmed the caterpillar tucks in its small head, rolling up into a tightish ring, so that by this stratagem they sometimes escape notice when they are disturbed in the soil by the entry of a spade or fork.

During their season of flight these moths and most others of the Noctua tribe that may resort to gardens, may be captured in numbers on moonless evenings by a device well known to the entomologist—viz., spreading syrup made of coarse sugar with a treacly odour upon any walls or palings that are convenient. Or pieces of rag may be dipped in this syrup and hung up for the same purpose. Some persons scent the compound, but this is not necessary. Greedily sipping the sweet liquor, the insects lose all care for themselves as a rule, and are easily netted or even caught with the hand. In this way hundreds of a still more troublesome species, the Cabbage moth (*Mamestra brassicae*), have been captured, thereby reducing by thousands the caterpillars of another season.

Some have imagined there must be more than one brood, since the moths may be seen about from early summer to the end of August, but I believe that all these have passed the winter in the chrysalis, only they emerge in succession. This caterpillar is of such varied tastes



Fig. 67.—*Mamestra brassicae*.

that flowers as well as vegetables supply it with food upon which it thrives, though Brassicaceous plants get the preference if accessible, and it is common upon autumn Cauliflowers, hiding in these and the hearted Cabbages to attain its full size, after feeding previously in situations that are exposed to more danger from man and birds. It is a caterpillar of restless habits, shown by its wandering from plant to plant, and in each temporary home it cuts galleries which are defiled by its excretions. Smaller than the preceding insect, it resembles that in its velvety texture and small head, but the body is different, usually of two colours equally divided, brown above and dull yellow below, sprinkled with a few white dots; now and then, however, one may be noticed entirely pale green. To prevent Cauliflowers being attacked by this pest is certainly not easy; the French gardeners search carefully for the young caterpillars while they are external feeders. Salt, if carefully applied to the leaves that may harbour them, kills the insects without any injury to the plants, also washings with tobacco water, lime water, or soapsuds. The application of sulphur by a dredger has been recommended.

Broccoli and Cauliflower heads have never, to my knowledge, been infested by the caterpillars of the large white butterfly. The species has no liking for concealment, and feeds exposed on the leaves of Cabbages and allied plants. But the small white (*Pieris Rapæ*), an insect which has had the name of the Turnip butterfly given to it from its frequency upon that vegetable, will occasionally deposit some of its eggs on the leaves of Cauliflowers in May; the caterpillars, almost of the same tint as the leaf, except that two rows of yellow spots on the body sometimes attract notice, work their way in if they can, but emerge when adult to fasten the chrysalis upon a wall or paling. A very simple application is destructive to these caterpillars, as also to those of its large relative, and that is abundance of water, the leaves being made thoroughly wet, as they are eaten they occasion diarrhoea, of which the caterpillars generally die. A second brood appears in August, but many of the butterflies, attracted by the floral display in our gardens, deposit eggs on a variety of plants besides culinary species. Fortunately, a company of parasitic flies seek out these butterfly caterpillars and kill many each year.—ENTOMOLOGIST.

PRIMULA NOMENCLATURE.

EVEN now opinion seems to be divided on this important subject. Among a few the idea prevails that the time spent in correcting Primula

nomenclature will be lost. On the other hand, however, many are perfectly satisfied that the majority of cultivators of these plants are deficient in a knowledge of their pseudo-names, nor can they obtain it without possession of Reichenbach's "Flore Germanica," where descriptions and figures are given. This expensive book is out of the reach of most gardeners, and even were it not so, would in a large proportion of cases be useless owing to the technical descriptions.

Nurserymen have in their possession at the present time dozens of Primulas so distinct that botanists have a difficulty in giving their affinity, while others are so nearly allied that other than florists have a difficulty in believing they are not one and the same plant. So much indeed has been done with cross-breeding and selection, without retaining any record of which were the parents or which were the seed-bearing plants, that the wonder is how the confusion is so small. What is the plant sent out as *P. latifolia*, as *P. pedemontana*, as *P. calycina*, and as *P. glaucescens*?

Three Primulas only lately introduced from the Himalayas have already gone through a second edition of synonyms, and when we hear of common *P. involucrata* or *P. Munroi* being cultivated as *P. obtusifolia*, and *P. rosea* for *elliptica*, it is time something was being done to make us generally more acquainted with the species of Primulas.

What is really wanted is that the Royal Horticultural Society will do in 1886 for Primulas what they did in 1884 for Daffodils, with one exception, and that is, to either keep down the number of varieties or make a selection of the best, print the list, and distribute it freely. The work has to be done, and, judging from the success of the Daffodil Congress, and the anticipated success of the Orchid Conference, no society is more fitted to carry through the work than the Royal Horticultural; and even if correct and simple nomenclature does not confer the benefit claimed for it, the Society will have done great work if it makes these deserving hardy plants as popular as they ought to be.—M.

ONCIDIUMS.

ONCIDIUM KRAMERIANUM.—This very fine Orchid, with its butterfly-like flowers, is not generally seen in the most healthy condition. The cause of weakly specimens is often crowding too much rooting material, such as peat and moss, about its roots. Probably another cause of failure is growing the plant in a pot or pan on the stage some distance from the glass and subjecting it to the same general treatment as many species and varieties of Orchids. It can be grown successfully in a pot or pan, the latter being preferable, but these should be of such a nature that they can be suspended some little distance only below the glass. This Orchid flourishes amazingly on a block if a little moss only is used for the purpose of retaining moisture about it during the growing season. It is also at home in a basket nearly filled with lumps of charcoal, with a little peat fibre and moss on and near the surface. If grown in pans it can be taken down while in flower and arranged amongst other plants if desired, and again suspended as soon as the blooms fade. The pans must be nearly filled with drainage composed of crocks and charcoal in lumps, using the latter freely, for this plant delights in having something to which its roots can cling. The plant must be well elevated in the pan, and charcoal should be freely used for this purpose mixed with a small per-centage of peat fibre from which all the small particles have been removed. A little living sphagnum moss may be used on the surface, but this must be kept in a perfectly healthy condition, being removed annually and replaced just as the plant commences growth.

Probably the most important item connected with its successful cultivation is the position in the house. It requires exposure to considerably more light than the majority of Orchids at all seasons of the year, therefore the lightest position the house affords should be selected for it. Shade from the burning rays of the sun is essential, but every ray of light possible must be allowed to reach the plant.

While growing a fair supply of water may be given, but not nearly as much as is required by many Orchids. During the season of inactivity very little water will be needed; no more should be given than is sufficient to keep the foliage and pseudo-bulbs plump. It will also do in a drier atmosphere than many Orchids, even during the season of growth, but special provision in this respect is not really needed. The drier, however, the atmosphere during the season of rest the better the plant will grow the following season. It will do well under ordinary stove treatment if the requirements pointed out are given. A temperature of 55° to 60° will be ample during the season of rest. Unhealthy plants will be found to recruit themselves rapidly if placed in shallow pans or upon blocks with very little moisture-holding material about their roots, and suspended close beneath the glass.

The flower stems must not be cut off after the flowers fade, for they yield flowers successively from the same stem for many years. Plants in a weak condition should not be allowed to flower, for the production of flowers prevents the plant establishing itself and attaining health and vigour. The flower stems from plants in this condition should be removed directly they appear, for if allowed to flower, which they do freely, they will grow more weakly, and eventually die.

ONCIDIUM PAPILIO MAJUS.—Two or three plants of this *Oncidium* should be grown in every garden where an attempt is made to grow a few Orchids; not because the plants are useful for cutting, but because few Orchids are more curious or attractive. The flowers resemble the butterfly in a much more marked degree than the preceding species. This plant will grow freely under the conditions advised, but does not appear so particular about light, for it grows strongly and flowers freely with us standing on the stage amongst a mixed collection of Orchids.

This Orchid also flowers from the same stems for years, and as every

strong growth produces a flower stem a good-sized plant is often very effective and rarely without one or more flowers expanded. The flowers are produced for a series of years from the end of the stem in succession, and when the end fails to produce any more flowers the stems are generally cut, as being of no farther use. This is a great mistake, for after the end fails, if the stems are retained, they generally branch from the next joint below on the stem, which again flowers for several years; and even when this ceases the capability of the old stem, for flowering is by no means exhausted, for it will branch again after producing two branches instead of one, as before, and flower again in the usual way. How long the stems will continue flowering I do not know, but I have only removed one exhausted flower stem from my plant in the space of seven years.

ONCIDIUM ORNITHORHYNCHUM.—The flowers of this Orchid are small, and therefore do not find acceptance in all gardening establishments where Orchids are grown. They are, however, numerous, and very freely produced on a branched arching stem, which renders this plant very effective when in flower, and the spikes are also very useful for cutting. It is the more useful because it flowers during the winter months, and the blooms are most fragrant; it is on this account a general favourite with ladies. Strong pseudo-bulbs not unfrequently produce as many as three flower spikes each, and very rarely less than two. It grows luxuriantly in a mixture of peat fibre and charcoal broken into moderately small lumps, with a good layer of sphagnum moss on the surface, which will become in the space of a season thoroughly matted with roots if the plant is strong and healthy. It does well in a pot nearly three parts full of drainage. It is very useful when grown in pots for purposes of decoration; in fact, it may with safety be employed in rooms for a short time while in flower. If space is limited it may be grown in a pan suspended from the roof or in a basket, which probably is the best if allowed to remain in the house in which it is grown while in flower. Its drooping spikes of bloom are displayed to greater advantage when the plant is suspended than is the case when grown in a pot and staked upright.

Many grow this plant under comparatively cool conditions, and I have frequently noticed that the foliage assumes a yellow hue instead of a deep green. The same condition is the result of growing the plant in stove heat the whole year round. It appears to thrive fairly well under both conditions, but does not increase in size so rapidly under cool treatment as is the case when grown in heat. We have found it increase in size rapidly and retain a healthy appearance when given a night temperature of 60° to 65°, with a rise of 10° or 15° from sun heat while making its growth; in fact, the temperature of an ordinary plant stove suits it admirably while making its growth, liberal supplies of water at the root being needed. After the completion of growth it should be gradually hardened to cooler treatment and a drier atmosphere. A good season of rest must be given, which the plants will enjoy in any structure where the night temperature ranges from 50° to 55°. Avoid cold draughts, and give no more water than is sufficient to prevent the pseudo-bulbs shrivelling.

ONCIDIUM FLEXUOSUM.—This grand old free-flowering Orchid should be grown in every garden where a stove exists and choice cut flowers are in demand. With a few good basketfuls of strong healthy plants they will scarcely ever fail to produce one or more of their long spikes of small yellow flowers. Under stove treatment during the whole of the growing season the flower spikes are pushed up successively, which is an advantage over having the whole at one or nearly the same time. The treatment recommended for *O. ornithorhynchum* will suit this plant well except the material about its roots, which should consist of charcoal and sphagnum moss in a living state. The former may be used freely and in lumps, and the latter upon and near the surface for the purpose of retaining a good supply of moisture about the plants during the growing season. This plant delights in having its roots in the atmosphere, and will throw them out very freely when grown in baskets and surrounded by the material advised. Plants that throw their roots into the atmosphere freely require very little material about them; in fact, a large quantity does more harm than good.—W. B. N. G.

SCILLA SIBERICA.

THIS is a gem, and when numbers of bulbs are planted together it probably produces the most charming effect of any of our spring-flowering bulbs. All who have not planted it where it can remain undisturbed, merely keeping the ground free from weeds, should do so next autumn. The bulbs at first need not be thickly planted, for if they are left to themselves they will seed freely, and in a very short time the whole of the ground will be covered. Those who have thick beds should allow them to seed, and when the seed is ripe gather and sow it on ground that can be left undisturbed. In due time the seedlings will appear in quantity, for the seed germinates very readily. This bulbous plant flowers equally freely whether grown in a sunny or shady position, but seedlings do not spring up so quickly in the latter as in the former.—N. G.

ANDROMEDA JAPONICA.

AT several meetings of the Royal Horticultural Society during the present year some remarkably fine specimens of this handsome shrub have been exhibited by Mr. Anthony Waterer of Knap Hill, and Messrs. J. Veitch & Sons, Chelsea, and though the plant is an old inhabitant of English gardens its true ornamental value has not yet been fully appreciated. Grown in pots and treated as a greenhouse plant, it succeeds

admirably, flowering most profusely in the early spring months, the branches being loaded with racemes 6 to 8 inches long and gracefully drooping, as shown in our woodcut (fig. 68). The flowers are pure white,

grown to be covered with flowers. As a conservatory plant this *Andromeda* is very useful, for it is most easily grown, only requiring good loam soil with a little leaf soil or a small quantity of old manure. During the



FIG. 68.—ANDROMEDA (PIERIS) JAPONICA.

like many of the Heaths in shape, the calyx and flower stalk being often of a reddish colour that contrasts very well with the white flowers. The racemes are chiefly produced from near the points of the branches, and the plants being naturally of a compact bushy habit, they appear when well

summer it is better out of doors, and in some warm localities it is grown in this way throughout the year.

Andromeda japonica is one of the few plants figured in Thunberg's "Flora Japonica" in 1784, and a comparison of that illustration with the

one accompanying these remarks, which represents a flowering shoot from one of Mr. Waterer's plants, shows in a remarkable way how great an improvement has been effected under cultivation. Thunberg mentions the plant as growing near Nagasaki, where it flowers in December, and from a dried specimen of one of these his illustration was probably prepared. The flowers are shown of very small size, the racemes thin and few, and the general appearance of the plant far inferior to those which have attracted so much admiration from visitors to Kensington recently.

HYBRID PENTSTEMONS.

THESE are amongst the showiest and most useful of summer-flowering plants, and they continue to produce flowers in quantity till the middle and even the end of October, provided the season is not too wet and severe frosts have not been experienced. But to have a long-continued display no time must now be lost in getting them into their respective places, so as to have bushy plants by the middle of June. It may be well to observe in passing, that although the hybrid forms of these Pentstemons are generally classed among hardy perennials, they are by no means capable of withstanding the ever-changing weather which is experienced during the late autumn months. So it is by no means prudent to risk the entire stock out of doors, and even in unheated structures during severe weather they are not thoroughly secure. Of this fact I am forcibly reminded when I read of a fine batch numbering about a thousand plants in great variety being completely killed a few winters ago during very severe frost, so that it is well to be on the right side, and have a few in reserve where they may be secure from frost. Presuming good cuttings were secured in the autumn of last year, they will be sturdy plants now and fit for immediate planting. Select, if possible, a showery day, so that they may start at once without a check. If a few cuttings can be spared these may be inserted singly in pots and planted out later on, and which, if cut back in early autumn and potted as soon as new growths appear, will produce a far more brilliant display than cuttings taken in autumn; and for this purpose (I mean for propagating) a few may be planted in reserve, so as not to interfere with the flowering plants in the beds and borders. By paying attention to these minor particulars, not only is the stock guaranteed for the ensuing year, but the flowering plants may continue in their places so long as they produce flowers, and seeing that late autumn flowers are generally well appreciated, it is only reasonable that these shall receive their share of admirers also.

Broadly speaking, these hybrids of Pentstemon gentianoides are so very distinct from all other garden decorative plants that they are without a rival. The great strides, however, which have been made of late by the hybridiser among Pentstemons seem known only to a few. They are by no means fastidious as to soil or situation, though like most plants they have a strong dislike for cold heavy soils. They may, among other places, be utilised to great advantage in the mixed herbaceous border, or for forming a belt in front of Rhododendrons and similar plants; or beds may be devoted to them alone. A very pleasing bed may be made with these and *Salvia patens* mixed, or *Calceolaria amplexicaulis* might form another fitting member to bear it company. Many other pleasing and striking combinations will readily suggest themselves, and, indeed, anything that is considered capable of producing pleasing effects, and at the same time relieve either by foliage or widely different flowers that monotonous glare of colour which is so often met with, will, I feel sure, be a step in the right direction. When these Pentstemons are coming well into flower there is somewhat of a break in the succession of hardy-flowering perennials, and these, with their long spikes of *Gloxinia*-like flowers, may in a measure assist in filling the gap.

I will conclude by naming some of the most distinct and freest-flowering varieties:—*Corsair*, rosy crimson, light throat; *Calliope*, scarlet carmine, rosy tubes, throat lined and marbled with crimson, a very effective variety; *Sucr e*, white, with violet border; *Ethel*, light pink; *Galopin*, violet; *Atlanta*, magenta crimson, with white, red-veined throat; *Lady McDonald*, rich scarlet, white throat, veined crimson; *Miss F. Hope*, white, shaded rose; *Mrs. Melville*, purplish mauve, throat white; *Aurora*, purplish crimson; *B. L. Freeman*, bright scarlet; *Lady Coutts-Lindsay*, pure white; *Black Knight*, maroon, throat shaded white; *Mrs. Duncan*, rosy scarlet, shaded cherry-red; *Yan d'Argent*, clear violet, white throat. To these may be added many others, all more or less distinct and beautiful.

I would advise intending planters of these to procure strong plants at once from nurserymen who make them a specialty, and unless well acquainted with them, or a good selection of them is already in existence, it is much the best to leave the selection of suitable kinds to the nurseryman. As soon as they arrive plant them in moderately rich soil, and if the weather be dry give a good watering, and then patiently await their flowering. There is a somewhat extended list of new varieties for the present season, but as I have not yet seen them in flower I cannot speak respecting them.—J. H. E.

ROCHDALE AURICULA SOCIETY.

ON Saturday last the third annual Show of this Society was held in the Public Hall, when upwards of 400 Show and Alpine Auriculas were staged in competition for the prizes offered by the Committee. The Hall was prettily decorated by collections of plants from gentlemen in the neighbourhood; a choice collection of stove and greenhouse plants being staged by the esteemed President of the Society, C. M. Royds, Esq., amongst which a fine pot of *Dendrobium thrysiflorum* attracted much attention. J. H. Lancashire, Esq.,

staged some good Azaleas and Spiræas, and Mr. J. Horsfall, Healey Nurseries, and Mr. J. T. Butteworth, Tonacliffe Nurseries, staged collections of plants, the latter showing a fine piece of *Dendrobium Wardianum*. A box of choice Narcissi from Dr. W. H. Browne, The Laurels, Hull, came in for a fair share of notice, and a certificate of merit was awarded. The Judges, Messrs. Jonathan Booth, Failsworth, T. Lancashire, Middleton, and J. Cheetham, Rochdale, awarded the prizes in the following order:—

Class A, six dissimilar Auriculas.—Mr. W. Bolton, Warrington, first; Mr. E. Pohlman, Halifax, second; and Mr. H. Wilson, Halifax, third. Class B, four dissimilar Auriculas.—First, Mr. Pohlman; second, Mr. H. Wilson; third, Mr. Robert Lord, Todmorden. Class C, pairs.—First, Mr. W. Taylor, Middleton; second, C. M. Royds, Esq., Rochdale; third, A. Potts, Esq., Chester. Class D, pairs (small growers).—First, Mr. R. Heys, Norden; second, Mr. J. Beswick, Middleton; third, Mr. Thomas Stirk, Rochdale. Class E, pairs (maiden growers).—First, Mr. T. Stirk; second, Mr. J. Bell, Baystate. Class F, four Alpines.—S. Barlow, Esq., Stakehill; second, J. Beswick; third, R. Heys. An extra first prize was awarded to Mr. Pohlman for four beautiful seedlings of the so-called laced division. Class G, green edges.—Mr. Pohlman premier with *Prince of Greens*, first with *Lancashire Hero*, and sixth with a seedling; second, W. Brockbank, Esq., Didsbury; third, A. Potts, Esq.; fourth, S. Barlow, Esq.; fifth, Mr. R. Lord. Class H, grey edge.—Mr. A. Potts took the premium with *R. Headley* and first with *Lancashire Hero*; second, Mr. R. Lord; third and fourth, Mr. W. Taylor; fifth, W. Brockbank, Esq.; sixth, Miss Woodhead, Norwood Green. Class I, white edge.—Premier, Mr. R. Lord, with *Smiling Beauty*; Mr. Wilson first with *Mrs. Dodwell*, third J. Simonite, and fourth with *Acme*; second, W. Brockbank, Esq.; fifth and sixth, A. Potts, Esq. Class K, Self.—A. M. Royds, Esq., was awarded the premier for a fine seedling and sixth with *Pizarro*; S. Barlow, Esq., was first, second, and fourth; Mr. W. Bolton, third; and fifth, Mr. Brockbank. Class L, Alpines.—Premier, S. Barlow, Esq., with *King of the Belgians* and sixth with Mr. Llewelyn; first, Mr. J. Beswick; second, fourth, and fifth, W. Brockbank, Esq.; third, Mr. J. Bell. Class M, two Polyantheses.—First, Mr. J. Beswick; second, Mr. W. Brockbank; third, Mr. S. Barlow; fourth, Mr. W. Taylor. Class N, Polyantheses.—Premier, first, third, fourth, and fifth, Mr. J. Beswick; second, T. Stirk; sixth, Mr. W. Taylor. Class O, six Fancy Auriculas.—First, C. M. Royds, Esq.; second, Mr. S. Barlow. Class P, six Primroses.—First, Mr. J. Horsfall.

HAND BOUQUETS.

OF late years flowers have been considered a necessary feature on almost all occasions. In the decoration of the rooms of the affluent flowers are as much in request in some cases as furniture, and their ameliorating influence in our large towns is not sufficiently recognised. Witness the pleasure with which the ragged urchin from some confined garret gazes on the beautiful flower beds that adorn the London parks and many of those connected with other large towns, and yet he does not injure them, although the innate desire he has for mischief would have found vent had these flowers been something else; but to him they are sacred, he gazes at them, and admires them in his way, and passes on. Let us hope their presence may bring better things into his mind. Certain it is that wherever flowers make their appearance in a window the visitor is sure to find peace and goodwill in that room; but I must not dwell further on this subject here, as my purpose is to find fault with flowers being placed where they ought not to be, or in a way not to be approved of.

For many years, I may say centuries, before horticultural and other societies gave encouragement to well-arranged bouquets, those tokens of good feelings had existed under the modest but expressive title of nosegays; and if we searched into their early history it would most likely be found that they originated with children. No one who has watched the playful actions of the young can have failed to observe the fondness they display for flowers, collecting them with great assiduity, and evidently admiring them with all the relish of a connoisseur almost as soon as they can toddle alone; years afterwards when their turn comes to attend the village school the girls may often be met with on a spring morning making up for their governess a nosegay that a royal gardener cannot excel. Primroses and Violets, with an outside bordering of the foliage of the latter, make one of the prettiest of all bouquets, and exceeded by none in point of sweetness. The agreeable contrast these two flowers offer to each other cannot be surpassed, and their quiet and unassuming beauty is never excelled by the riches of the flower garden in advanced summer. I have often instanced these flowers as being the best from which a nosegay could be made, and one confined to them alone as a model of what a nosegay ought to be, not only because of the beautiful combination of colours, but from the fact of their seldom exceeding those moderate dimensions to which I think all bouquets intended to be carried in the hand ought to be confined. Here I expect to meet with much opposition from the fair sex, who assume to be the only judges in such matters, but I nevertheless make the attack on those huge artificial bundles of flowers which they affect to prize so much, and some of which as objects of manufacture are certainly deserving of great praise, but as objects of beauty there may be some difference of opinion. On the equally important point of utility there can be no question that the size of hand bouquets often renders them an unwieldy appendage; but as fashion has ordained so they have to be, and one can only have the privilege of grumbling about them. Let us now endeavour to see in what way they can be made to serve the purposes for which they are required, and at the same time present the best appearance the materials will allow.

At most horticultural shows of late years it has been the custom to offer prizes for the best bouquet for the hand, as well as one for the table; and here I shall confine myself to the first named. I have on some occasions acted as one of the judges in this department, and there is nothing, perhaps at a show on which the judgment is more likely to be criticised. An experienced friend told me he would rather undertake a judge's duty in any department than in that of bouquets and Grapes, the difficulty in discriminating between the rival merits of specimens of the latter being as unpleasant as that arising from the different views which each one takes as to what should guide the censorship of bouquets. The critical eyes of the many fair lookers-on in the after part of the day show that the bouquets are amongst the most attractive features at the show, and it is almost sure

to happen that some—very possibly a large number—differ in opinion from the judges; sometimes, I believe, a protest has been entered against the decision—although I have not known any case of such being made—and of course where this is the case some unpleasantness is the result. Now, if bouquets were judged by some code of laws like that attempted to be laid down for judging Grapes, some reasons might be given for the decision. Perhaps someone will be good enough to put forth a few ideas bearing on the matter, and by way of an introduction I beg to submit the following crude notions as to what I think ought to be borne in mind when such things are placed before a judge.

1. A hand bouquet must be made so as to be easily carried in all positions in the hand without any of its parts being disarranged when it is turned upside down; and to prove this the judge to be at liberty to swing it sharply about in all directions in his hand, and if it will not bear this ordeal, to reject it.

2. The bouquet to be shown without any paper or other guard or bordering, excepting that of flower or foliage; the handle also not to be too thick, for the reasons given in Rule 1.

3. No flower having a disagreeable smell to be used for a hand bouquet; where such exists the bouquet to be disqualified. N.B.—This rule need not be enforced in a stand of flowers for the table, unless it be thought advisable to do so.

4. The quality of the flowers used—*i.e.*, their rarity, not to be taken into consideration unless the arrangement be equally good, or better than where common ones are used.

5. No bouquet to be exhibited under a glass shade unless all are provided with this appendage, but the exhibitor may be allowed to keep one over his bouquet until requested to remove it prior to judging, not afterwards.

6. Dried and Everlasting Flowers not to be mixed with fresh ones, and the same may be said of foliage.

7. Flowers may be mounted on wire or other substance, but too much wirework ought not to be used, so as to indicate its presence by the weight of the bouquet.

It is not assumed that the foregoing rules embody all that may be necessary, but I throw them out as a sort of outline to be added to or amended as may be thought proper. At the same time let it be borne in mind that they are intended for guidance in judging hand bouquets, and not those for the table. The latter may have a more feathery outline, as they are not expected to be turned upside down, but the hard usage those for the hand have to undergo necessitates their being somewhat formal and compact, and the overspreading twig of Maidenhair or other Fern which may be merely stuck in amongst the flowers of the table-stand ought to be firmly fixed in its place in the hand bouquet, otherwise it will be speedily displaced when the latter is brought into use; the judge ought, therefore, to ascertain this, and if it or any flower fall out when the bouquet is turned upside down, or subjected to such trials as a bouquet will in ordinary usage have to undergo, he is not expected to replace them, but to lay them by the side of the bouquet to show its defects to the public.

Great size having been already spoken of as objectionable, the other extreme must also be avoided; but much weight ought to be given to an agreeable combination of colours, and in general the best effect is produced by the fewest varieties; about three, or at most four, kinds of flowers with the necessary foliage, be it Ferns or anything else, are sufficient for most nosegays, and I am not certain but one or two kinds of flowers only would be better still. Formality, however objectionable in other combinations of flowers, is indispensable in a nosegay, otherwise it will not endure hard usage, and such flowers only as have stiff stems and are otherwise capable of enduring hard usage should be allowed to project beyond their fellows; the same may be said of foliage. The judge should be guided by what he would expect the bouquet to be after an hour in a ball-room, and not merely by what it is at the moment.

Perhaps one class of bouquet may be in some degree exempt from the rather severe ordeal I have advised for the others, and that is the bridal bouquet; for a greater amount of care and gentle treatment is likely to be accorded to it, and it need not undergo the five minutes' gyration I have sometimes thought others ought to do on the vanes of a windmill. Still I would insist on its veil of Fern, which seems an indispensable accompaniment, being fixed so as not to come out when turned upside down; and as custom has established the rule to confine this bouquet to white flowers only I will in this instance find no fault with it, but may say that a liberal allowance of green is an improvement. As a censor one must handle the bridal bouquet as well as the others, and if any of the contrivances used to mount the flowers be visible, or the handle too thick, or the whole too heavy, I would be disposed to judge unfavourably of it, for no surroundings of lace, be it from Brussels or still further off, can compensate for a bad arrangement of Nature's choicest ornaments.—

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SPICATE INFLORESCENCE IN CYPRIPIEDIUM INSIGNE.

At a recent meeting of the Philadelphia Academy of Natural Sciences Mr. Thomas Meehan referred to a specimen of *Cypripedium insigne* which had a spike with two flowers and other undeveloped buds, the normal character being a one-flowered scape. These departures from the normal form afforded valuable lessons, though frequently passed over as mere freaks of Nature. A spicate inflorescence was a common characteristic in allied species. From the illustration before us, we might infer that the one-flowered kinds were species in which the power to develop a proper spike had been arrested. We might expect to see attempts at this form of inflorescence in *Cypripedium acaule* of our own country.

A very important lesson from these occasional departures had but recently the attention given to it that it properly deserved, and that was that whenever any particular plant departed from its normal form, other characters came into existence, which, in a separate plant would, and often did, obtain for the new departure the rank of a species. In this instance the second flower on the spike was different from the lower and normal one in the upper segment of the perianth (sepals), having a regular outline. In the normal form it was so crumpled as to present a tri-lobed appearance. In the normal form the labellum was so elongated as to be three times the length of the column. In the upper flower the labellum was but double the length, giving it a somewhat globular appearance. There were other variations that formed a combination of

characters quite sufficient to mark a species if they were constantly produced in a separate state. Why could not this rare occurrence become a continuous one, and thus a new species be formed—created, we may say—out of an older one? There can be no reason. We may call this a freak of Nature, but it could not have occurred without that combination of circumstances which we call law. We have no warranty for saying that a law which has operated to produce a departure in a solitary instance like this might not have a more permanent power at some other time. Nor is there any warranty for believing that a law that has operated as we see here on one plant might not operate on a hundred, or on all the plants of a district, or even on plants in separate districts widely separated from each other.

In a paper by himself, published in the Proceedings of the Troy Meeting of the American Association for the Advancement of Science, "On the Introduction of Species by Sudden Leaps," as well as elsewhere, he had given illustrations of the sudden appearance of identical forms in widely separated localities. If we may generalise from these facts, as we seemed almost warranted in doing, we need not be always looking for the links supposed to be missing, which the belief in the hypothesis of development by slow modifications compelled us to search for, nor need we be reduced to the only alternative of believing that all new species sprang from one parent, which formed a centre of distribution in each particular case. A whole species might be called into existence in the shape of hundreds of individuals or in numerous centres if only a law that we know from these instances can operate suddenly and exceptionally should continue regularly to act. Such a belief would tend materially to remove difficulties in the way of theories of evolution that now prevented a full acceptance thereof.

If we can conceive that a suddenly introduced and yet permanently acting force was introduced to operate on some lower beings, the difficulty might be removed. It seemed to him that in some palæontological fields there are evidences of rapid evolution at certain periods, and of greater permanency at others, and this could only be by the introduction of a force equal to the emergency, as in this sudden case brought to the notice of the Academy above.

It would be an interesting study to endeavour to trace the laws that operated in these changes. In this study we must leave behind us impressions which we have imbibed from the idea of mere freaks, hybrids, a return to primitive forms, and other mere guesses with which scientific literature abounds. On the table before us, he observed, are the recent Proceedings of the Royal Society of Tasmania, in which is an account of a remarkable change in a Potato, a variety brought from Scotland a few years previously, known as Patterson's Victoria, a variety with white flowers and round white tubers, which, after a culture of a few years in the new climate, produced purple flowers, flat ovate tubers, and these tubers with pink eyes. The members of that Society looked at it as a return to the original form of some hybrid variety. We here, with other facts before us, would rather regard it as the effect of environment operating on some innate, and so far unknown, cause of change which might lie dormant through long ages till the peculiar conditions of the environment called them into active life. There seemed in fact seeds for form, as well as seeds for individuals, awaiting the required conditions for germination and rapid growth. In the one case we were able to perceive and appreciate them, except in some of the lowest organisms. The principle that contained the germ of form was, however, yet as wholly unknown as that of the supposed disease-germs of the atmosphere.

MANAGEMENT OF HORTICULTURAL SOCIETIES.

I HAVE noted Mr. Cox's reply, and as I do not think any end will be gained by a continuation of this subject, I have done for the present. I may, however, be permitted to thank Mr. Waterman for his correction of my statement in relation to the Shrewsbury Society. I did not refer to the schedule for the present year, as I have not yet seen one, but I have been labouring under the impression that for the last and previous years—referring to the summer exhibition—two or three classes only were open to all England.—NORTHERNER.

AMONG THE RANGES OF NEW ZEALAND.

(Continued from page 357.)

ON Friday morning we turned out at 5 A.M. to witness sunrise on the mountain. In front stood Mount Torlesse in all its grandeur, with shingle slides carved out of its sides by snow and wind; on the left a spur covered with shrubs and herbaceous plants; on the right bare shingle slopes, and in the rear Big Ben with the sun shining on its top. Not a cloud in the sky, not a movement in the air; the tinkle of the creek which ran by our tent and the croak of the wekas being the only sounds which broke the solitude of the mountains. Breakfasted on porridge, biscuits, and tea, and tubbed in the icy water of the creek. With our coats and waistcoats off, collecting bags and alpenstocks in hand, we commenced the ascent of the mountain.

On Mount Torlesse and its spurs are to be found a greater number of species of the Alpine flora than perhaps on any other mountain in the colony. Commencing the ascent from the top of Porter's Pass, a short description of the plants will be given, and the elevation at which they were collected. Of the family of Mountain Aster (*Celmisia*), which forms quite a third of the herbaceous vegetation, *C. gracilentia* has grey leaves; the flowers are white, 1 inch across, and the plant is very much scattered between 3 and 5000 feet. The leaves of *C. Lyalli* are very narrow, 1 foot in length, the flowers are white, 1½ inch across. This sort grows in

patches from the top of the Pass to 5000 feet. *C. spectabilis* is very beautiful, the upper side of the leaf is a dark shining green, the under side creamy white; the white blooms with yellow centres are freely produced. This is the Cotton Plant of the shepherds. They peel off the cotton and use it to light their pipes with the aid of a lens. This variety is very common from 3 to 5000 feet. We found *Gentiana pleurogynoides* growing in the broken rock, between 4 and 7000 feet; but the leaves of the plant from the higher elevation were dark purple. The flowers of this *Gentiana* are white, but a new species recently collected has white flowers beautifully striped with purple. Of *Dracophyllum* we found some fine young plants, and as it forms the chief scrub in the alpine regions, it is very useful for covering the floor of the tent, and for firing, as it will burn whilst green. It is found from 3500 to 4000 feet. Keeping a direction north by west, we were now commencing the true ascent. The ground we were travelling over was of a brown colour, composed of old moraines much broken up. *Myosotis Traversii* was found growing in favourable spots. This is a beautiful mountain Forget-me-not, with long drooping spikes of citron-yellow blooms. Specimens in flower were obtained, also a few plants from 3 to 5000 feet. In damp places *Myosotis antarctica* was collected. It forms neat patches some 6 inches across, covering itself with solitary white flowers. The gaps between the clumps of *Dracophyllum* were getting wider, and the ground was of a looser character. It seemed as if the soil which originally covered the mountain side had been washed away, exposing the shingle except where it had been held together by the roots of *Dracophyllum*. In fact, it was around these clumps that most of our little alpine plants were collected. *Drapetes Dieffenbachei* next put in its appearance. It is a very neat little shrub, some 4 inches in height, of a dull green colour. We collected plants of it from 4 to 5000 feet.

Keeping as near to our course as the nature of the ground would permit, we made but slow progress; the footing was bad, and the heat of the sun was very powerful. The little annual Eyebright (*Euphrasia Monroi*) was in full bloom, its snow-white flowers with yellow throat making it one of the brightest gems of the alpine flora. At 3900 feet the big *Dracophyllum* was very stunted, and in its place *D. muscoides* was occasionally seen. The colour of the rocks had changed from brown to grey, and the Mountain Totara, *Podocarpus nivalis*, was met with for the first time. This alpine Conifer at lower altitudes reaches 10 to 20 feet, but here it never rises off the rocky soil in which it grows more than 6 or 8 inches. *Ligusticum aromaticum* grew very luxuriantly on the sides of shingle slips. *Ranunculus pinguis* was found in flower, and specimens collected. We were now entering the true alpine zone. *Aciphylla Lyalli* had disappeared, leaving the field to its relative *A. Monroi*, like a small Palm, with its fan-like leaves 2 or 3 inches long. It is an interesting plant when seen in bloom. Plants were got from 4 to 6000 feet. At 4500 feet we detected the perfume of *Celmisia discolor* and *C. viscosa*. The leaves are covered with a scented gum. Specimens were collected up to 5000 feet. Stunted examples of *Logania tetragonia* were growing in the shingle, and *Ligusticum filifolium*, a beautiful plant, was found in similar situations from 4700 to 6000 feet.

We made a short halt to put the specimens collected into the drying paper to preserve them from injury. Some clouds which had rolled up from the plains settled about the top peaks of the mountain, and the wind blew keenly. After a spell of ten minutes we resumed the ascent. Varieties of the Mountain Epacris were next seen, and if it can be induced to grow in gardens its neat foliage and habit will make it a desirable plant. Having reached the moving shingle, where we lost 6 or 8 inches at every step, the most difficult part of the climbing began—no shrubs to hold on by, nothing but an expanse of moving shingle at 5400 feet above the sea. Not a word spoken, for breath was too valuable to be wasted. In very steep places the shingle sometimes comes down in avalanches, sweeping all plants and scrub away. We had now only 100 feet of steep climbing between us and a little plateau. The shingle here was larger than that previously crossed, very loose, and ready to hurl one down to the bottom, so we advanced carefully. From the plateau the course was downwards a short distance, then we had about 1000 feet of hard climbing between us and the top peak of Mt. Torlesse. On the shingle *Veronica epacridea* grew in patches 10 yards square. Most of the plants would now be taken for Mosses at first sight. *Helophyllums* covered pieces of rock with their bright green adpressed leaves sprinkled with small white blossoms.

At 6100 feet we found patches of *Celmisia laricifolia*, the smallest of the Cotton Plants, 3 feet across and half an inch high. A few feet higher we met the first plants of the Edelweiss, *Helichrysum grandiceps*; botanically, this plant differs considerably from the Swiss Edelweiss, but it bears a great resemblance in foliage and flower. It is at home in loose shingle or in the crevices of a cliff. The silvery tint of the foliage and the singular flowers make it a very interesting plant. We collected a good quantity of it, also specimens to dry. *Aciphylla Monroi* were still to be seen at this altitude. Climbing on the eastern side the first patch of the Pygmeas was met with, which showed that we were getting near the top. *P. pulvinaris* is like a Moss, the flowers are very small, about one-eighth of an inch, white, with purple stamens in the centre. Here some rare alpine Mosses were collected. Striking across to the north-western side we continued the ascent; 300 feet of stones and broken rock to cross before the top was attained. *Ligusticum filifolium* was in full bloom in shingle, and a good specimen was obtained. A few feet higher we collected the curious *Ranunculus Buchanani*. The leaves are fleshy and of a lovely greenish-blue tint, the flowers we did not see. At 6100 feet the choice alpine Fern *Polystichum cystostegia* was found in crevices of the rocks. This Fern must be a very hardy one, as it is covered with

snow six months in the year. On the top of a rock we collected *Cotula atrata*. The flowers are dark purple, and resemble the garden form of *Senecio*, but they are covered with yellow stamens, which add much to its beauty. Having reached the top of the lower peak we saw a patch of snow some 20 yards across, about 100 feet below the highest peak. Climbing more to the westward we passed over the broken rocks, which were very loose; rocks, stones, plants, but no water. Tried to eat biscuits, but could not. We wanted water, so we made for the snow. An hour's hard climbing brought us to it, and we got a lump apiece; but as it increased our thirst we built a small fire of *Dracophyllum muscoides*, and soon had a pannikin full of melted snow. Feeling somewhat recovered we searched the margins of the snow, and discovered *Forstera sedifolia*, also some alpine Mosses. Leaving our bags on the rocks above the snow we commenced our final climb of some 100 feet, and reached the cairn on the top peak of Mt. Torlesse. We pulled down the cairn, expecting to find some memorial of previous climbers, but as there was nothing we rebuilt it, and sat down to enjoy the view. There was a thick haze over the plains, but the sea was bright, and looked as if it would come over the plains at a moment's notice. The Port Hills stood out clearly, and we could follow the winding course of the branches of the Kowai. To the west were Mt. Franklin and Mt. Rolleston, and down below us ran the Porter river. On the north the Waimakariri could be heard rolling and bowling over its tortuous bed till it was lost in the haze. To the south was Ben More, and in the south-west we could see Lake Lyndon, surrounded by mountains. The course of the river Rakaia was plainly marked by the bush-covered mountains on the southern bank. The plants found on the highest points were *Pygmea pulvinaris*, *P. ciliolata*, *Helophyllums*, *Raoulia grandiflora*, *Cotula atrata*, *Dracophyllum muscoides*, *Gentiana pleurogynoides*, *Ligusticum filifolium*, and a few Mosses.—W. N. ADAMS.

(To be continued.)

THE GOOSEBERRY AND CURRANT SAWFLY.

THE following extract is from Miss Ormerod's Report on Injurious Insects recently noticed in these pages.

Mr. W. J. Goodwin, of Winfield House, Crouch, Sevenoaks, notes that he considers "the best remedy for Gooseberry caterpillars is to give a liberal sprinkling of fresh good soot early in the morning when the trees are damp, two or three large handfuls to a good-sized tree, so as to make it quite black with soot. It is of no use unless it is done when the trees are damp, so that it sticks on well. If it comes off by rain coming shortly after, it must be done again. It acts, of course, as a first-rate manure afterwards, causing the trees to make good wood for another year.

"The caterpillars always first appear on leaves in the middle and bottom of the trees, and may be detected first by a few small holes in a few of the leaves, resembling prick-holes of a pin. This is the best time to apply the soot."

Mr. Kay, Barone Cottage, Rothsay, N.B., mentions:—"The caterpillar made considerable havoc not only amongst the Gooseberries, but amongst the Currant bushes, a thing that had not been seen before. I may state that I did not give the ground the usual coating of paraffin in the spring, and probably the grubs may have made headway on that account."

The attack of Sawfly caterpillars on Gooseberry leafage is one which appears certain to appear more or less every year, and often, and especially in bush-fruit-growing districts, causes great loss to the growers. As it has now been reported yearly since 1878 inclusive, with various methods of prevention and remedy found to answer for keeping it in check, it may be of use to give a list of the most serviceable of these under special headings.

HAND-PICKING THE CATERPILLARS, OR SHAKING THEM DOWN AND DESTROYING THEM.

"Hand-picking, if taken in time, the best remedy."—ALEX. FORBES.

"Hand-picking found to be the most satisfactory remedy."—C. GRIERSON.

..... "On attack being observed put on hands at once, and cleared the garden; and thus, although very numerous, the insect was checked."—D. S. SCOTT.

"Had the caterpillars shaken from the bushes and crushed."—J. SUTHERLAND.

..... "Prevented serious injury by shaking down the caterpillars whilst quite small and crushing them on the ground, and by hand-picking later on."—T. H. HART.

"Trees found to be attacked were immediately well syringed and shaken, the caterpillars dropping on to the soil, where they were treated and burned with hot lime."—W. WARD.

"The most serviceable, and, in the end, cheapest remedy, is considered to be to lay a piece of canvas sufficiently large to cover the surface of the ground under the trees attacked, and give the trees a good shake, thus dislodging the caterpillars, then have the canvas removed and the caterpillars destroyed."—A. SMITH.

..... "Crop was only saved by hand-picking, and shaking the caterpillars on to sheets placed under the bushes."—REV. F. ADAMS.

DUSTING INFESTED BUSHES.

The application which appears most surely serviceable is dusting the caterpillars with powdered hellebore, but, without great care and washing of the fruit, this poisonous dressing is likely to prove so injurious to those who partake of the fruit afterwards that I cannot take on myself to advise the application. With regard to sulphur and soot, the advice given above by Mr. Goodwin at p. 39, and below by Mr. McCorquodale, as to applying them when the bushes are damp, so that the powder should adhere, should be particularly observed.

"Flowers of sulphur dusted on the leaves when the dew is on, or, if in dry weather, after watering; only necessary to dust the lower part of the bushes if taken in time."—W. MCCORQUODALE.

..... "Used sulphur powder, as recommended above, and found it as

useful as hellebore powder, without fear of possible evil consequences."—J. W. WHITTON.

"Trees dusted with hot lime and soot, and there was no further trouble with the caterpillars."—W. WARD.

"A few handfuls of roached lime thrown over the infested plants stopped the evil."—T. BRUNTON.

Paraffin as watering in spring and washes to the infested bushes. (For method of mixing paraffin washes, see "Paraffin," "Wash," and "Emulsion" Index.)

"Gooseberry Sawfly caterpillar only appeared slightly. A watering of paraffin had been given early in the spring to the stems of the bushes and the ground beneath them."—J. KAY.

"Paraffin, in the proportion of 4 ozs. to a gallon of water, was decidedly serviceable, but could not be used after the fruit was ripe."—T. H. HART.

AUTUMN OR WINTER REMOVAL OF SURFACE SOIL FROM UNDER THE BUSHES.

For prevention of all attack, excepting what may be borne on the wing by stray Sawflies blown from elsewhere, I believe the above plan to be the most certain.

The caterpillars go down in autumn a little below the surface, the depth varying from about 2 inches to somewhat more, according to nature of ground. There they lie in small brown cocoons, like little pellets of earth, during the winter; and when the leafage comes out in the spring, so do the Sawflies from their cocoons under the bushes, and lay their eggs to start attack on the leaves. If the earth is removed, with the cocoons in it, and got rid of it in any way, the amount of attack is enormously lessened.

"For twenty years Gooseberry Sawfly caterpillars have not occurred in the gardens under treatment, in any quantity. The surface soil under the bushes is annually removed in winter, a deep hole is dug in one of the quarters, and in this the removed soil, with whatever may be in it, is buried. The soil under the Gooseberry bushes is replaced by that out of the hole, with the addition of some manure."—ALEX. ANDERSON.

"When there is reason to fear an attack [*i.e.*, when there has been bad attack the previous year, ED.] the soil should be removed to the depth of 2 inches round the bushes in the early spring, and a good sprinkling of lime dusted round each bush; by this means the caterpillars are cleared away and destroyed."—GEORGE MCKINLAY.

"Caterpillars not nearly so injurious as last season. During the winter I removed all the surface soil from under the bushes."—JOHN MATHESON.

"Gooseberry bushes in my garden, from beneath which the earth had been scraped a few inches deep in the previous autumn and replaced by manure, &c., were free from attack."—ED.

I have also a note from a gardener in this district near Isleworth, where Gooseberries are largely grown, that one method of treatment is to scrape all the surface from beneath them in the autumn and to form it into a line between the rows of Gooseberry bushes, and there dig it in.

In this way a great amount of attack is prevented, but it is necessary to be careful as to having the scraped-off surface soil dug in thoroughly. On one occasion I saw the first part of the operation carried out on a large scale,—the earth was scraped from under the bushes and formed into lines between them,—but there work stopped; consequently the cocoons lay just as safely as if nothing had been done, and when spring came the Gooseberry leaves were again riddled by the caterpillars.

DRESSINGS OF GAS-LIME AND LIME.

"I dress over all my Gooseberry ground with gas-lime in early spring before forking over the soil, and have not seen one of these caterpillars for three years."—T. BOYD.

"I am now satisfied that I have benefited by the application of gas-lime between my bushes. Grubs there certainly have been, but, whilst they have almost stripped other bushes of their leaves, those on the dressed ground are little the worse for the attack."—T. H. HART.

"Currants and Gooseberries in the open garden have kept free from attack. I think this was owing to the trees being dressed with lime early in the spring. Currant trees on the wall not dressed with lime were attacked."—A. WARD.

PYROLA ROTUNDIFOLIA.

Our figure represents one of the most charming families of dwarf-growing hardy plants in cultivation. They are by no means numerous, but it sometimes happens that the less in number are the species the greater is the interest attaching to them. The greater number of these plants are natives of Britain, while some are from North America and the Pyrenees; but no matter where they are from, they form one of the choicest groups of plants that we possess. Why they have remained so long in background and been excluded from our rockeries and other shaded situations is to me incomprehensible. Their evergreen pear-shaped foliage is a sufficient recommendation for them, to say nothing of their spikes of white and other coloured flowers. They are met with in shaded and sheltered alpine regions among decaying vegetable matter. They are very accommodating when taken in hand for decorative purposes, and they are fine for exhibition in the spring and summer. Afford them the elements under which they are found, and then success is almost a certainty.

They are admirable plants for cool ferneries under glass in the shade, but they are impatient of wet, and must be provided with efficient drainage. A mixture of peat, leaf soil, and coarse grit is a suitable compost for them to grow in, but with the best attention we sometimes have the reward of foliage only, or accompanied with only very few flowers, while

at other times we are richly rewarded with a full supply of beautiful flowers. They are charming for the bouquet and any other decorative purpose for which cut flowers are adapted.

They are increased by seed and division, which is best done when the plants have done flowering. The kinds most generally met with are *P. media*, *P. minor*, *P. rotundifolia*, *P. secunda*, and *P. elliptica*, but they are all worthy of culture, and ought to have a place in every collection of rock and border plants.—N.

TEMPERATURE FOR ODONTOGLOSSUMS.

THE cool system of treatment advocated by some cultivators for these plants is a mistake. Many Orchids will live if frost is only excluded, but what is the condition of the plants the following spring? *O. Alexandræ* will bear this treatment perhaps better than any other, but to be able to just keep the plants alive or preserve the majority, is not sufficient



Fig. 69.—*Pyrola rotundifolia*.

for those anxious to retain their plants in perfect health through the winter and increase their strength as rapidly as possible.

Odontoglossums, or what are termed cool Orchids, will not do satisfactorily in a night temperature of 45°, falling 5° lower in the morning. The temperatures given very rarely allow of fire heat being applied, but if the temperature externally falls 8° or 10° below the freezing point, and inside will fall considerably below 40°. Even if this only occurs occasionally, the temperature is too low for these plants, and *O. Alexandræ* will soon have the tips of its leaves browned, while not only will the foliage damp of *O. cirrhosum*, but the pseudo-bulbs will decay. In a proper temperature the last-named is a very free robust grower, and increases the number of its pseudo-bulbs rapidly, but in a low temperature it falls just as rapidly. *Ada aurantiaca* will not pass the winter in the temperature described, for it is one of the first to show the effects of the cold, and finally succumbs. The same may be said of that lovely *Masdevallia tovarensis*. This and *Mesospidium sanguineum* will not live in such a

low temperature, and might safely be used as test plants, for if they remain in perfect condition through the winter, cultivators of cool Orchids may rest assured that the temperature has not been wrong. They will remain in good condition in the temperature I advise, and which I have found the best.

It has been advanced that these plants rest better in a low than a high temperature, but experience points to the fact that this is imagination. In the former the cultivator runs the risk of losing his plants, or if they do not die, the following growing season is required to recruit them, instead of increasing the size of their pseudo-bulbs and adding to their numbers. In the latter they pass the winter safely, grow strongly, even luxuriantly, and flower abundantly.

The night temperature most suitable from October to March is 45° to 55°, the lowest being the morning reading. These figures are given as a guide, but external conditions should be taken into consideration. For instance, on mild evenings when the temperature outside stands at 42° or more, the temperature may safely stand at the higher figure given, or even a few degrees higher will do no harm. When it falls to freezing point or below, the house when banking up the fire stands 50°, falling to 45° in the morning. It will then be seen how the temperatures are regulated, and even if the house falls 2° or 3° lower in the morning during very severe weather no injury will result. The figures given allow of a little heat being left on the house all night, and thus the house can be left safe against morning frosts without falling injuriously low. A little heat is kept in the pipes on the very mildest occasions during the winter, even if the highest temperature given is slightly exceeded. At this season of the year the house for these plants should be kept at night 55°, not falling below 50° in the morning. When very mild or very cold these figures may safely vary 5° either way. During the day these figures are exceeded by 5° unless the weather is very cold. To attain successful results the object should be to maintain as uniform a temperature as possible.—
A GROWER.



HARDY FRUIT GARDEN.

So fair and full of promise are the prospects of a crop of extraordinary abundance of all kinds of hardy fruits, that the very great degree of certainty of its realisation is an inducement to all lovers of fruit culture to endeavour to make a special effort that this shall be a year of real progress in our knowledge of fruit. Cherries, Plums, and Pears of all sorts are, indeed, a charming sight just now, so too are many Apples of early-flowering sorts, while the later kinds have clustering flower buds set so thickly upon every spur and branch that they, too, will soon be clouds of bloom. Our wall of palmette verrier Pears now affords a curious and instructive sight; the trees are upon the Pear stock, they are all of the same age and size, the extension of the branches being complete, each tree having filled the space assigned it. But there the general resemblance ends, for there is much difference in the position of the blossom upon each tree. Beurré Clairgeau is, of course, crowded with bloom in every part, from the stem outwards, so too is Glou Morceau, which of the two is by far the most valuable Pear. Others are devoid of blossom near the stem, and upon others the blossom is still further from the stem, so much so as to be near the outer part of the horizontal portion of the branches, whence it clusters thickly enough upwards upon the whole of the vertical parts. We mention this as another important fact showing the superiority of palmette verriers over the old horizontal forms. Be it understood that it is not our intention to infer that horizontal branches only bear fruit near the outer ends of the branches, but rather to show how slowly fruiting spurs form upon many of them. So well ripened was the wood last autumn that there can be no doubt of the fruit setting so thickly that much of it must be taken off. The fruit of some sorts of Pears on wall trees is already set. Do not let the thinning be premature, but wait till Nature's thinning is over and the fruit is swelling fast; then thin, and remember that a moderate quantity of really fine fruit is altogether preferable to much inferior fruit. We would ask fruit growers in all parts of the country to take note of the peculiarities of each kind of fruit, to compare sort with sort, to ascertain the relative value and use of each, the order of ripening, keeping qualities, and all other points of merit or demerit. If this is done well a mass of useful information will be acquired that will materially assist our subsequent work, for much information is still wanting to make the best possible selection for different parts of the country, which can only be had in the way we have shown. Peaches and Nectarines have a little of the outer foliage blistered, but none of the trees have suffered sufficiently to affect the growth; the fruit is setting freely and swelling fast. Apricot fruit may be thinned for tarts as it becomes large enough.

FRUIT FORCING.

PEACHES AND NECTARINES.—*Earliest-forced House.*—The fruits are now swelling and colouring fast, and as air is essential to ensure good flavour, free ventilation must be secured. Care will be necessary in admitting air in the case of cold north-easterly winds prevailing, as any

sudden check would seriously cripple the foliage and jeopardise next year's prospects. If not already completed let all stopping for the purpose of increasing the size of the fruit and tying down be concluded. Elevate the fruit well above the foliage by placing pieces of lath on the trellis for the fruit to rest upon, and guard against crowding or shading with more young wood that is required for next year's bearing. In quick forcing Peaches swell to a large size under a strong heat that would prove fatal before the stoning process is completed, but the size of the fruit is had at the expense of flavour. Syringing must be continued until the fruit begins to ripen, being careful to use water that will not leave a deposit, and to do so sufficiently early to have the foliage and fruit dry before night. Soft rain water will not do any harm, but water containing lime will seriously disfigure the fruit. Outside borders that have been covered should not have the protective material entirely removed, sufficient in any case being left of the most suitable material to afford a good mulching.

Inside borders ought to be made of good rather stiff calcareous loam, about 2 feet deep, resting on 1 foot thickness of good clean drainage, with proper drains so that the water can pass through the soil and superfluous carried off quickly, care being needed to afford copious supplies of water, as when in full growth the trees rarely suffer from having too much water, and many failures are attributable to a deficiency of this life-sustaining element. In the making of fruit borders the greatest mistake is in heaping a mass of rich material together, through which a few grass roots pass, soon getting beyond control, and forcing up a quantity of unwholesome food at a time when the trees should be at rest, resulting in unripened wood and unhealthy trees. The remedy for most evils the Peach is heir to would be prevented by moderate-sized borders, and the roots kept to it, the compost under rather than over rich, and whatever is wanted of a stimulating nature should always be applied to the surface as a mulching or in liquid form.

Succession Houses.—Proceed with tying the growths as they advance, and keep the stopping well in hand of those shoots retained to attract the sap to the fruit. Only such shoots should be retained as will be necessary for extending the trees or to afford fruit next season, therefore remove all superfluous ones so that light and air may have free access to the foliage, but be careful not to remove a large quantity of spray at a time, as that would be almost certain to cause a check, and such should be avoided. When the fruit is stoning it is advisable to let the shoots extend as far as it can be done without overcrowding. During stoning keep the temperature steady at from 55° to 60° at night, and 60° to 65° by day artificially, with 10° to 15° rise from sunheat and a free circulation of air. The trees should be kept in health by the timely application of water to the roots and foliage. On no account neglect early ventilation, and keep the roots active near the surface by good mulching. If red spider or scale appear prompt measures must be taken to effect a riddance, employing an approved insecticide. It is no use letting the insects make headway; the appearance of the first insect should be the signal for battle, and a moderate use of insecticides at that stage will prevent further mischief.

MELONS.—It will be necessary to maintain a drier and more airy atmosphere when the fruit is ripening in order to insure full-flavoured fruit. A little air should be left on at night, as a close atmosphere is fatal to colour and flavour, and very often a cause of the fruit cracking. Maintain a night temperature of 70°, falling 5° on cold nights, and commencing ventilating at 75° in succession houses, and increase the ventilation with the solar heat until it reaches 85°, between which and 90° keep through the day, reducing the air as the sun heat declines, finally closing at three to four o'clock on bright afternoons, with plenty of atmospheric moisture in the houses. Add more soil to the hillocks or ridges as the roots push through the sides, repeating it at intervals until the allotted space is filled. Do not allow young plants to become root-bound before being planted, as they become stunted in growth and do not grow freely afterwards. If they are likely to get root-bound before the houses, pits, or frames are ready to receive them they should be shifted into pots 2 inches larger, and be potted firmly.

THE BEE-KEEPER.

ECONOMY IN BEE-KEEPING.

(Continued from page 341.)

To the scientific bee-keeper the bar-frame offers advantages wanting in the fixed hive system. Having hives in which the combs are freely interchangeable he can keep his hives all strong, and by care work up a feeble hive into a strong one, before the honey harvest begins by giving it a bar of brood from a stronger hive.

Then, again, he can feel the pulses of his hives and spread the brood. We are constantly reminded that it were best to leave Nature alone, and that it were idle to try to improve on her working, and that the only result will be certain and deserved failure. Still, we venture to think this is an utterly

erroneous statement, and which, on investigation, will not hold water. To take an example from bee life. No one, we think, will attempt to deny that the use of foundation saves the bees much time and food; but if we carried out the opinion that Nature was all-sufficient we should not give the bees any of this most valuable invention; nor should we feed them at all, as if they did not get enough to keep them during the winter they were not the fittest, and therefore they ought not to survive; but though proud of our Scotch descent, this opens a field of metaphysics that we shudder to enter. Properly managed, spreading brood is one of the greatest advantages of the bar-hive system. It must be done cautiously and skilfully, or it will result in failure, the advent of foul brood, and maybe the loss of our hive or hives. The old adage holds true: "Fools rush in where angels fear to tread," and if the novice without any experience tries to attempt this, unless he is one in a thousand, his failure is as certain as if, without knowing the difference between an artery and a vein, he tried a difficult surgical operation.

One great advantage in favour of the skep, and that which appeals most strongly to the man who wishes to make bee-keeping pay, is the cheapness as compared with a good bar hive. A common skep can be bought for 2s. and a Pettigrew for some 6s., while we can get no bar hive of any service for winter and summer under 15s. or 21s. Again and again have we been told that splendid hives can be made out of old egg boxes, lobster-tin boxes, or any other kind of packing cases, and that the total cost is only 2s. or 3s. We have tried the experiment with a fair measure of success, and a hive made out of these materials is still in our apiary; but it did not pay for the trouble of making it, and it is far better to make hives out of good deal than experiment with old lumber. A bar hive properly made will last for years; we have some now which, with an occasional coat or two of paint, have been in constant use for over seven years. Their original cost, as we make all our own hives, was 7s. 6d. for materials; if we had bought them from a hive-maker the cost of labour, &c., would most probably double the price.

The articles absolutely necessary for a bee-keeper can be procured by the outlay of a few pounds. If he cannot handle tools the bar-frame hives will be the most expensive item. As we have said before, these hives cost about 15s. each, and though we are fully convinced of the great superiority of the bar hive, we would advise no one to launch out into buying a large stock of these to begin with. Let him get one or two in the first instance, and then compare the results with those of the skeps that he possesses, and then by degrees convert his straw hives into bar hives. If he imagines that his harvest and wintering, which is the chief sign of a good hive or a clever bee-keeper, is superior from using the former system, by all means let him stick to it, for he will do no good with the other system. The sectional supers can now be purchased for 4s. per hundred; they will require a super case, which can be made for a few pence, or obtained fitted with sections for 3s. 6d. In addition, the beginner will have to buy a smoker, which will cost him 4s. 6d., but this, with proper care, will last him for years, as we still use the one we purchased some ten years ago. An old jam bottle (Beach's 20 oz. is a useful size) with a piece of cheese strainer tied over the mouth when the bottle is filled with syrup, will do for a feeder, though better kinds may be bought for slow or rapid feeding, and a small quantity of foundation will start him with all the necessary furniture, with the exception of the indispensable slinger, which will cost 15s. Abbott's Little Wonder having served us for many years, and as economy must be studied, this expense might be shared between two or more bee-keepers. So, after all, the tirades against the expensiveness of the bar-hive system, the difference of cost between it and the skep system lies practically in the first cost of the hives, and, as we said above, these with proper care ought to last for years. The real difference in the outlay is, after all, very small, and will be repaid many times over if the novice will follow out instructions and

not take it for granted that after a year's experience in bee-keeping he has nothing to learn. The great charm of a progressive science like bee-keeping—for it is a science—lies in the fact that no one is too old to learn. Every year that passes increases our knowledge, and though "Knowledge comes but wisdom lingers" we progressive bee-keepers are not above picking up the crumbs of information, no matter where we may find them. We test new theories to see if they will bear practical proof, and as a result bee-keeping, which used to be only a hobby, is now becoming an industry, and that not unimportant. But to make it profitable we must not follow blindly any one system or systems, but strive to weigh each and all, always keeping our minds open to convictions, no matter how much it may disturb our former belief, and then we shall find our knowledge will lead us to the higher wisdom, instead of being bigoted upholders of any one system.

We again repeat: Keep accurate accounts, do not waste your money in buying useless appliances, follow the experience gained by others before you, modified, it may be, by your own; and no matter how low the price of honey may fall, the profits of bee-keeping will well repay you for your outlay, as well as provide a most pleasant and interesting occupation.—THE SURREYSHIRE BEE-KEEPER.

THE NATIONAL BRITISH BEE-KEEPERS' UNION.

"A STAFFORDSHIRE BEE-KEEPER" wants to know the promoters' names of the above scheme, makes an insinuation, and also says the same question was asked in the *British Bee Journal*, but fails to note any answer, so concludes none was sent. I wish to inform him and others who were looking for my letter that I sent a reply in time for its appearance on April 15th in answer to the querist; but the editor, in the exercise of his sense of justice and fairness, declines to publish it, giving the reason "why" on page 161 for May 1st, because, I suppose, I had invited him to publish particulars of the scheme and let his readers see what it really was that he was misrepresenting. As he says, "If you wish to advertise the Bee-keepers' Union you can do so in the ordinary way by using our advertisement columns." By this I presume he thinks he will be able to make something at least out of it, and contrasts very strongly his motives with those of the promoters of this scheme. He also says he will decline to insert any letters on the subject until he knows more about the Union. Knowing the antagonists with whom we have to deal, at present I must decline to publish any list of names.

When a person adopts a *nom de plume* he generally wishes his logic or arguments to be considered, and not himself personally, and it is something of this nature that actuates the promoters. The scheme is put forward as a definite proposal, and in it every member will be equal to and on a level with every other member; so it would be contrary to this principle for anyone to arrogate to himself exclusive powers. So every bee-keeper who approves of the scheme was invited to join in promoting it, and if any could find fault with its rules or improve them he was invited to do so. As I have not yet received or seen any complaint or suggestion either way I must take it for granted that the articles are as perfect as they can be made at present. Those who are interested in preventing the scheme floating are doing their utmost to misrepresent and undermine it, which is very flattering to us. On the other side, I find bee-keepers are getting impatient for its launching, so convinced are they of its ultimate value, and not a single person has as yet given an opinion against its value to the honey producer.

I am willing to answer all questions, either publicly or privately, as we have nothing to be ashamed of, but querists must not expect answering if they couple insinuations with their questions.

It is proposed to devote all the remainder of this year to enrolling members, whose subscriptions will date from January 1st next; the first assemblies can then be held next Easter. The expenses of floating it and getting the necessary plant and fixtures will be somewhat heavy, so we shall be glad of any benevolent donation towards the preliminary expense fund which bee-keepers and well-wishers may be willing to contribute.

In conclusion, allow me to say the money to float it will be found, and it will certainly be floated notwithstanding the opposition of the British Bee-keepers' Association and the *British Bee Journal*.—JOHN HEWITT, Hon. Sec. to the Promoters, Cambridge Street, Sheffield.

IN my previous letter I asked a simple and direct question, "Who are the promoters of the National Bee-keepers' Union?" In return, I am favoured with thirty-two lines of evasion. I want a plain answer to a plain question, and until I obtain one I shall certainly keep my half-crown in my pocket.—A STAFFORDSHIRE BEE-KEEPER.

ZINC FLOORS FOR HIVES.

I HAVE adopted some zinc floor boards with sliding shutters underneath to cover same, which I presume should always be kept closed

excepting during hot weather, when the bees may require ventilation. Kindly say if I am correct, and if this is the way you use them, or should they get a little ventilation throughout the summer. Any information will be esteemed.—J. J.

[The sliding shutters to zinc floors should be some distance from the zinc—say from 1 to 2 inches. Ventilation should be given in all cases of transit and during hot weather, but in many cases must be closed at night, unless during very sultry weather. Some bee-keepers give a little ventilation during the whole of winter. I have done this often myself, and never found any evil results with strong hives, but the case might be different with weak ones; therefore on that point it is well to be cautious. Neither is it advisable to ventilate during summer unless with strong hives and during hot weather. But in all my experience I never found evil arising from moderate ventilation from beneath. It insures dryness, prevents stifling and incipient foul brood; but if carried to excess would protract breeding.—LANARKSHIRE BEE-KEEPER]

THE BRITISH HONEY COMPANY.

DR. WALKER, page 363, says it appears I prefer false assertions, and that I must know that there are scores of buyers of honey, both wholesale and retail. If this is so, why the need of the Honey Company? He says, "The reference to America is peculiarly unfortunate." I gladly admit it is to him, as in the issue of the *British Bee Journal* for April 15th, page 132 (which I had not seen), there is an article by Arthur Todd of Philadelphia, U.S., bearing out my statement; and here let me say I should most strongly oppose any tariff on foreign honey in order to protect British producers. I am a free trader even where my own interests are concerned.

Who has said the Honey Company was selling glucose or foreign honey as pure British? I was not aware they were selling anything yet except shares, but they have taken powers in the articles of association to sell glucose and manufacture it if they choose, and all these powers were taken, as Dr. Walker has so conveniently told us, on purpose that instead of the shareholders being one penny the worse they may be pounds the better.

I think he does not reflect much credit on his abilities as a director to plead ignorance about advances being made by banks. I did not say "Of course without any interest till the honey was sold." These matters are of too common everyday occurrence amongst business men to need explanation.

His remarks about offering 1s. per dozen for glaziers' diamonds are "peculiarly unfortunate" when, as a matter of fact, he could not at the lowest wholesale price in the way of trade buy them at 100 times this sum. It looks as though he has written those lines in the *British Bee Journal* for May 1st, page 156, which says,—

"And 'twere best to sell our honey,
Though the prices low may fall;
Better fifty pounds at sixpence
Than to get no coin at all."

This style of business seems to be the principle he is going to adopt in directing the Honey Company.

Let me also tell him I did refer to Mr. Lyons' letter as well as others, and I defy him to show where I misquoted the leader in the *British Bee Journal* or misconstrued the context. The editor clearly and distinctly said the Honey Company would give more per pound for small parcels than for large ones, and did not imply that he preferred to retailing it for more. He must excuse me if I take his statement of a merchant of some fifty years' experience for what it is worth.

I am glad to see him proclaim that he pays his debts, particularly for advertisements.

Down here, in Hallamshire, we have a great many "Grinding Wheels," at which we grind and polish things to show up their true colour.—A HALLAMSHIRE BEE-KEEPER.

[We are inclined to think that in this controversy there has been sufficient free advertising of both the Honey Company and Bee-keepers' Union, and that these subjects having been adequately discussed in the interests of the public our duty in the matter must now cease.]

TRADE CATALOGUES RECEIVED.

James Veitch & Sons, King's Road, Chelsea.—*Catalogues of New Plants for 1885 (Illustrated) and Bedding Plants.*

George Neighbour & Sons, 127, High Holborn.—*Catalogue of Bee Hives and Apiarian Appliances (illustrated).*



* * * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We

request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

White Cineraria (*Lowestoft Correspondent*).—The flower sent is a good variety, but not quite such a pure white as the one we recently noticed. It is, however, well worth preserving.

Figs (*Reader*).—Figs that are just showing now will ripen this year under favourable conditions, and if the trees are grown under glass a second crop will ripen also, but will not do so in the open air. They may remain on the trees all the winter, and if very small will ripen next year, but if large before winter they are certain to shrivel and drop off in the spring.

Vines Unsatisfactory (*J. C.*).—You never mentioned wireworms in your former letter. In such numbers they are unquestionably injurious, and by attacking the roots the supply of moisture to the leaves is seriously checked, and scorching follows as a matter of course. You cannot do better than extend the growths of the healthy Black Hamburgh.

Drying Bulbs (*J. B. W.*).—They are dried on the Continent on shelves in large sheds or barn-like buildings, through which the air passes freely. We assume there is no better method of preparing them, and the plan is certainly preferable to alternations of sun and rain. The soil has an influence on the character of bulbs, and there are usually several white bulbs amongst Snowdrops which have not formed stout well-developed skins.

Border Alpine Auriculas (*Dr. Harper*).—The truss of flowers sent is very fine indeed, the stout stem supporting thirty blooms, several of which are 2 inches in diameter. The variety is of no value from a florist's point of view, the flowers being too rough, but will be useful for border decoration in soil that is so well adapted for the growth of the plants as that of your garden evidently is. The variety is not named, and you can give it any name you choose.

Single Asters (*A. S. D.*).—We stated, in answer to a correspondent a few weeks ago, that we were unable to state from whence seed of single Asters could be procured, and that the varieties referred to were raised by the writer of the article on page 91, who is not a vendor. The seed was simply saved from single flowers, which are occasionally produced from a packet of ordinary seed. We have seen hundreds of them from seed of inferior strains. The seed of the "leading houses" to whom you have applied fruitlessly is evidently too good for you, or it would produce some single flowers.

Destroying Aphides (*Subscriber*).—There are several preparations equally effectual for destroying the insects. Two ounces of nicotine soap, or the same quantity of Gishurst compound or Fir tree oil dissolved in a gallon of water and used as hot as you can bear your hand in it for ten seconds, will destroy green fly on Roses, and twice the strength will kill the black fly on Ivy. Quassia water made by boiling an ounce of chips in a gallon of soft water with 2 ozs. of softsoap will destroy the insects, so will tobacco water. You can use any of these that may be the most conveniently obtainable. We keep our Rose trees clean by syringing them frequently and forcibly with pure water.

Superphosphate of Lime (*W. S.*).—This is good for mixing with the soil for Chrysanthemums at the rate of one part of the manure to twenty parts of soil, and it is also good for top-dressings toward the autumn. It is not made with either prussic or carbolic acid, but with sulphuric acid as follows:—Place 5 cwts. (or 12 bushels) bones on an earthen floor surrounded by a rim of ashes; pour on as much water as the bones will suck up, and then pour on 2 cwt. of sulphuric acid. It will boil somewhat violently for a while. When this has subsided it will get tolerably solid, and the ashes and all may be shovelled up together, and will be fit for use in a day or two. Crushed bones are excellent for mixing with soil in pots, but do not act so quickly as a top-dressing as when dissolved.

Spiraea palmata and Coleuses (*T. A. E.*).—If the plants are in pots they can be grown in the greenhouse or a frame until after they have flowered, when the best plan will be to plant them out in a border of good soil. They can be left out all the winter if the crowns are covered with coal ashes, or they can be taken up and potted for early flowering. The soil should consist of loam and leaf soil with a small quantity of old manure. The following are good varieties of Coleuses:—Dark varieties: Mrs. George Simpson, Allen Chandler, and Royal Purple. Painted varieties: James Barnshaw, Distinction, and Harlequin. Yellow varieties: Canary Bird and Yellow Gem. Pale and crisped varieties: Favourite, Lovely, Exquisite, and Captivation.

Fertilisers for Garden Crops (*E. T. H.*).—We are not at all surprised that you are somewhat in doubt as to which fertiliser to choose from the many that are advertised. It is the same with others, both individuals and articles; and it is quite impossible that we can tell you which of the many manures to use, simply because the soil in our garden, or that which we employ in growing plants in pots, may be quite different from yours in its chemical constitution, and consequently the fertiliser that we find good might be of small use in your case. We can only state as a rule that plants and crops which require to be quickly grown are the most benefited by nitrogenous manures, these containing a large per-centage of ammonia; while those that are desired to produce seed or bear fruit year after year should contain a good amount of potash and phosphate of lime. The best plan for persons to adopt is to purchase small quantities of different fertilisers and try their effects on different plants and crops. This is cheaper and of more practical use than analysing the soil. We have tried both methods, and hence our advice is founded on experience.

Vine Leaves (*H. J. H.*).—There is not a speck of mildew on the leaves you have sent, which are quite clean, and as they are also fairly stout in texture we do not apprehend they will be infested, provided the atmosphere of the house is well managed and a judicious system of ventilation practised. A close murky atmosphere invites mildew. Very early morning ventilation is important, and we should not have the house entirely closed at night. If the air of a vinery is in the slightest degree oppressive to yourself by being close, stuffy, and heavy it will not be in the best condition for the Vines, but will be suitable for their enemy the mildew. At the same time sharp currents of dry air must not be permitted. Considerable judgment is needed in ventilating a vinery. One person can keep down the temperature to say 80°

n hot weather with much less ventilation than another can, simply because the one starts early and prevents the heat increasing rapidly, while the other starts late, and the temperature rushes up and he cannot get it down again.

Soil for Chrysanthemums (Cambridge).—Unless the loam is exceptionally adhesive it will, as we understand it to be turfy, be sufficiently porous, the wood ashes having both a good mechanical and chemical effect.

Destruction of Marguerites (A. L., Southminster).—Your plants are attacked by a leaf-mining insect of a similar nature to those that are so destructive to Celery, Parsnips, and other plants.

Carnations in Pots and Beds (J. W. G.).—Our small manual on florists' flowers, post free 4d., gives concise instructions on growing the plants in pots.

Primulas sinensis (Lover of Perfection).—If these plants are required very large, with several crowns, the seed should be sown at once.

until they commence rooting into the new soil, when light and air are essential for sturdy growth. When these pots are well filled with roots repot them into 5 and 6-inch pots, which are large enough for growing extra sized plants in.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers.

COVENT GARDEN MARKET.—MAY 6TH.

THE cold rain has considerably affected trade in our market, and prices of hothouse goods are lower. Vegetables plentiful.

FRUIT.

Table with 4 columns of fruit and their prices per unit (sieve, bushel, dozen, etc.). Items include Apples, Chestnuts, Currants, Figs, Grapes, Lemons, Oranges, Peaches, Pears, Pine Apples, Plums, and Strawberries.

VEGETABLES.

Table with 4 columns of vegetables and their prices per unit (dozen, bundle, punnet, etc.). Items include Artichokes, Asparagus, Beans, Beet, Broccoli, Brussels Sprouts, Cabbage, Capsicums, Carrots, Cauliflowers, Celery, Coleworts, Cucumbers, Endive, Heros, and Leeks.



PROVISION FOR WINTER.

WITH only enough hay, straw, and roots left to afford food for a fortnight for some fifty head of cattle, pastures practically bare of food, what is to be done?

in addition to yards filled with manure, some dear-bought experience, which ought to act as a safeguard in future, and prevent that overstocking in winter which is so common and so entirely out of proportion to our provision of roots and forage. Our opinion having been asked about the sale of these beasts, we said at once, "Wait till warm days and April showers bring grass, and prices will rise." "But I cannot; to wait for such a chance and meanwhile purchase food would be simply ruinous," said the farmer. Now, what was wanting in the provision for winter and early spring upon this farm? More roots—Mangolds, Swedes, Carrots, Parsnips, cooked Potatoes, and of green crops. How relieved would this puzzled farmer have been could he have turned to an acre or two of Thousand-headed Kale? Sown now and again in July for a succession it can be had in use from autumn till May is well in, and so fast does it increase in bulk in March, April, and May as to well merit its title of Thousand-headed. If you have fallows see if at least an acre of land cannot be spared for drilling with Kale. It is true enough that drilling requires more seed than a seed-bed and transplantation, but then we avoid the risk—often very great—of loss in transplanting, and the earlier sowings are generally safe from attacks of flea.

Drumhead Cabbage is another winter crop of much value both for cattle and sheep. It may be that one day ensilage will become so popular as to take a leading place in provision for winter; but do not let it entirely supersede so safe a crop as Cabbage. Rather adopt the safer plan of having a fair proportion of each kind of food. It is considered that silage has a tendency to render sheep costive, but given with Cabbage it cannot have that effect. We like to have the winter and spring crop of Drumheads well established, thinned, hoed, and growing freely before the haymaking begins; and if it happens to be placed alongside a flourishing field of Mangolds and another of Carrots, we can look forward a considerable way with feelings of satisfaction and confidence. Land well cleaned, thirty loads of farmyard manure per acre, a dressing of artificial manure to be worked in with the horse hoes after the plants are strong and growing freely with the roots spreading fast in the soil; the rows 30 inches apart, and the plants 24 to 30 inches apart in the rows. These are the most important details of Cabbage culture. The artificial manure should consist of $\frac{1}{2}$ -cwt. nitrate of potash, $\frac{1}{2}$ -cwt. nitrate of soda, $\frac{1}{2}$ -cwt. superphosphate, $\frac{1}{2}$ -cwt. steamed bone flour. This, in addition to thirty cartloads of farmyard manure, may appear an extravagant dressing, but it is not. Remember, it is no uncommon thing to have a couple of full-grown Drumhead Cabbages weighing a hundredweight, and an acre of Cabbages 30 inches apart contains 6969 plants. Under ordinary cultivation two-thirds of that number are under-sized, the really fine show specimens being few and far between; yet ought not the fact of some growing to so large a size that we are actually told of specimens weighing upwards of 70 lbs. apiece, to act as an incentive to a higher mode of culture, even if we have to thin the plants to 3 or 4 feet apart? Cabbage and Kale culture ought also to receive special attention on sewage farms, crops of extraordinary bulk and weight being obtained by the regular use of sewage.

Even under ordinary culture excellent results are obtained. Take, for example, the case of a farmer who grows about 90,000 every year. He says:—"I attribute the healthiness of the sheep very much to the free use of Cabbages. They are cut and carted out on the ground, beginning in November, and generally lasting till March. They grow to be a good size, weighing from 10 to 30 lbs. I have seen some weigh 35 lbs. They give more wholesome food for sheep and cattle and in larger quantities than anything I know of. For the fattening and store beasts we pulp the Cabbage and mix it with chaff and meal and cotton cake. To the cows we give it on the ground. The ewes and all stock are very fond of it, and nothing agrees so well with them."

The late Dr. Voelcker said: "No kind of green food cultivated on a large scale in the field contains so much nutritious matter as Cabbage. Being much more nutritious, weight for weight than Turnips, and at the same time very succulent, Cabbages form a valuable food for milch cows. Cattle are very fond of Cabbage, and dairy cows fed upon it and some hay produce much and rich milk, and the butter made from the latter is free from the disagreeable flavour which it always has when the cows are fed on Turnips." In daily use from October till March, liked and eaten greedily by cattle, pigs, and sheep, of easy culture, great bulk, and most nutritious—what better crop can we have to assist us in making better provision for winter than we have ever done before? Let us, therefore, plant it extensively for winter, and a proportionate quantity of Thousand-headed Kale to follow it in spring, so that they may keep cattle off the grass till it is abundant and strong.

(To be continued.)

WORK ON THE HOME FARM.

Corn-hoeing has been pushed on as fast as possible, for the winter corn is growing so fast that hoeing must soon be finished. Golden Drop Wheat was left till last, its habit of spreading its growth out upon the soil preventing the use of hoes among it till late. Both spring and autumn-sown corn crops are vigorous and full of promise. Grass retained for grazing, and dressed early with home-mixed artificial manures, has grown so fast that the cows have been turned out upon it sooner than we expected, the growth being fully a fortnight earlier than that of the unmanured pastures. It is by closely watching the effects of these manures that we are able to judge fairly of their value—an early bite of grass, a heavy crop of hay, an annual improvement in the condition of the pasture; these are some of the results which we have now had so repeatedly before us, that we shall be more and more urgent with our readers to use them. We have now a field of winter Oats that is "the wonder of the parish," for the land was waste and foul with wild growth three years ago. Two successive crops of spring Oats have been taken from it since it was taken into cultivation, and now we have a third Oat crop which was sown last autumn with Professor Jamieson's half dressing of artificial manure—home-mixed be it remembered. Another half dressing was given early this spring, and now the field is a sight most pleasant, most instructive, for the Oats are already almost "knee high," and of a deep green colour betokening soil stored with nutriment, and not exhausted even by a third crop of Oats, as the wiseacres said it would be.

As the cattle leave the yards the manure will be removed and put into mixens, for which purpose beds of road-siding have been prepared about a foot deep. The manure is first heaped upon the soil till heat is generated and it is sinking together, the heap is then turned and the soil brought to the top so as to cover the manure, and to prevent the escape of fertilising gases so far as is possible. Avoid making such heaps upon waste land by road sides, rather spare the requisite space at a convenient point in a field so that none of the richness of the heap is let run to waste. It is good practice to get the whole of this work done before the haymaking begins, for the roads and land are now dry enough to render carting light and expeditious. When haymaking begins we ought not to expect horses to be at liberty for manure cart. The felling of Oak trees has been in hand lately, and the bark is being despatched to the tannery as it becomes fully dry, which requires about a fortnight after it is taken off the trees.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	9 A.M.				IN THE DAY.				Rain		
	Barometer at 32 nd and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.		On grass.	
1885.	Inches.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	In.		
April.											
Sunday	26	29.610	55.4	50.2	S.E.	50.0	62.6	47.6	104.1	42.2	—
Monday	27	29.722	56.6	50.9	N.E.	50.2	65.6	45.5	106.7	39.3	—
Tuesday	28	29.754	58.5	51.0	S.E.	50.4	67.3	41.2	110.6	33.9	0.553
Wednesday ..	29	29.675	54.1	50.4	S.E.	51.6	62.6	48.9	92.7	44.8	—
Thursday	30	29.873	52.9	47.8	N.	50.7	63.2	40.0	96.5	35.2	—
Friday	1	29.643	53.8	48.6	E.	50.5	58.1	41.8	93.3	37.4	0.034
Saturday	2	29.661	50.3	45.7	S.E.	49.7	59.8	42.7	104.4	37.5	0.030
		29.705	54.5	49.2		50.4	62.7	44.0	101.2	38.6	0.617

REMARKS.

26th.—Generally fair but cloudy; rain in evening.
 27th.—Very bright early, cloudy morning, fine afternoon and evening.
 28th.—Fine and bright (first white butterfly seen), heavy rain at night.
 29th.—Cloudy threatening morning, fine bright afternoon.
 30th.—Fine and bright early, cloudy morning, fair after.
 1st.—Fine and bright early, cloudy morning, heavy shower in afternoon.
 2nd.—Dull and showery at intervals.
 Rather cooler and damper than the previous week, but the temperature still slightly above the average.—G. J. SYMONS.



COMING EVENTS

14	TH	ASCENSION DAY.
15	F	
16	S	
17	SUN	SUNDAY AFTER ASCENSION.
18	M	
19	TU	
20	W	Paris International Horticultural Exhibition (twelve days).

THE ORCHID CONFERENCE.

NY other place than the most prominent would be unfitting for the record of an event so important as this. The aggregation of species and varieties of this great and increasingly popular family of plants under the auspices of the Royal Horticultural Society was a happy idea, and especially as a conference of orchidists was at the same time suggested. Much is known about Orchids, but by no means all that is desirable. They have been written about from almost every conceivable point of view; yet so far from the subject being exhausted, we are only, as it were, on the threshold in one important aspect—namely, hybridisation and the establishment of seedlings. Until comparatively recently we were exclusively indebted to the perseverance of collectors in furnishing plants, but the time is not far distant when a great and important “home supply” will be forthcoming. We have long been cognisant of the work in this direction at the head quarters at Chelsea; and when Mr. Harry Veitch acceded to the request to contribute a paper on the fertilisation or increase of the plants from seed we conceived the time opportune for elucidating the subject by a series of engravings.

Very few persons have any knowledge of Orchids in a seedling stage, and still fewer have the requisite patience or opportunity to raise them. The seeds are so minute that unless great care is exercised they are liable to be washed away whenever water is applied. Moreover, the development of the young plants is so slow that two or three years elapse before the full characters are assumed, and this period is sometimes trebled before flowers are produced. Raising hybrid Orchids is consequently the work of a life, with many years of waiting, sometimes for failures; but the successes have been great in the hands of skilled hybridists, and the expectation of even more remarkable results is still encouraging such steady workers as Mr. Seden. The engravings show at a glance the gradual process by which the seedling Orchid acquires its mature characters, the several stages of advance being most interesting. The drawings have been very carefully prepared by an experienced artist, and portray the structural peculiarities with the greatest accuracy—a matter of some difficulty, especially as regards the earlier conditions. The seeds are magnified.

The other papers read, together with the discussion which followed, brought out many interesting facts, but that on hybridisation certainly excited the greatest attention, and had that been the only result of the Orchid Conference it would have repaid the promoters for their exertions. As to the Exhibition itself, the report which follows will convey a better idea than can be done in these introductory observations. It was a most remarkable display, and considering that no prizes were offered the number of plants shown was surprising, and at no previous non-competitive exhibition has such a magnificent collection of Orchids been obtained. At the Manchester Whitsuntide shows we have seen many extremely handsome displays of Orchids. The Regent's Park

summer exhibitions have comprised some magnificent groups, but on these and similar occasions liberal prizes have been offered to induce exhibitors to bring their treasures. It is therefore especially satisfactory to find that, as at the previous conferences, many were willing to exhibit for honour alone, and without any prospect of pecuniary return. Orchids, it is true, are very different from the majority of plants. They are easily injured in conveyance to or from the show, and in unfavourable weather the owner of plants worth some hundreds of pounds would naturally hesitate before exposing them to unknown dangers. So it is that until the morning of the Orchid Conference there was much uncertainty as to the extent of the display, and it appeared at one time as if the number of exhibitors would fall far short of what had been anticipated. Fortunately, however, entries steadily increased, and abundance was furnished to render the conservatory brilliant with the varied colours of innumerable Orchid flowers.

Special preparation was made in the spacious building just mentioned, much greater space being obtained and a better general effect ensured. The shrubs and trees upon the south side were moved back from the centre promenade, occupying the narrow side walk, which was seldom used, and thus giving an increased width in the centre. Side stages about 2 feet clear of the ground were placed upon each side, and a double one of similar height down the centre. These, while elevating the plants sufficiently to enable them to be seen advantageously, avoided what is too frequently a deplorable mistake at horticultural shows—namely, staging the plants too high. Viewed from one end the general effect was most satisfactory, and the method of arrangement adopted deserved all the commendation it received from the visitors who crowded the conservatory upon the two days.

It was regrettable that the northern growers were not more numerous represented at such a gathering, and probably had some proposition been made with regard to defraying the expenses of conveying plants to Kensington many would have been induced to attend. Perhaps also the near approach of the Manchester Exhibition prevented some of the leading growers of Lancashire sending their specimens. Whatever was the cause, however, with the exception of the collections of flowers from Scotland, there were no contributions from the north.

In the programme of the Conference issued some time since it was expressly stipulated that as few duplicates as possible should be shown. At the time this was a very wise provision, as it was desired to obtain representatives of a large number of species and varieties, and it was feared that the space then at command would be filled by collections in which the common species would predominate. After the alteration in the arrangement of the permanent occupants of the conservatory it became evident, however, that the extended space would permit a much greater number of plants to be shown, and it was regretted that the stipulation had not been omitted. No doubt this combined with the other causes mentioned served to reduce the number and extent of the entries, yet it was a grand Exhibition, well indicating the floral beauty of the family and the excellence of the culture adopted in all the leading gardens.

It may be asked, What was the object of the Conference, and is that object accomplished? both of which questions can be readily answered. In the first place the promoters wished to obtain an exhibition of the principal genera, showing the chief characteristics of cultivated Orchids, and for this reason twelve—namely, *Cattleya*, *Lælia*, *Odontoglossum*, *Masdevallia*, *Cypripedium*, *Oncidium*, *Epidendrum*, *Dendrobium*, *Vanda*, *Saccolabium*, *Aerides*, and *Stanhopea* were selected as types. Secondly, it was hoped that by reading papers upon the most important subjects connected with Orchids, and by subsequent discussion, a great amount of useful and interesting information would be obtained, that if published in the form of a report might be of considerable service to orchidists; hybridisation, cultivation, and no-

menclature being the subjects most fittingly chosen for elucidation. Such was the project, and to the second question—"Has the Conference accomplished its object?"—an emphatic affirmative answer must be given. As an Exhibition it was highly successful, the papers submitted were of a specially interesting character, and the discussion elicited many additional facts of importance. The Council of the Royal Horticultural Society, and the Committee, therefore merit the thanks of all orchidists for the initiation and satisfactory execution of the scheme.

We have previously given the programme, but it may be appropriately repeated now.

PROGRAMME OF THE EXHIBITION.

Class I.—Collections of Orchids in flower.

Class II.—Species and varieties of the genera *Cattleya*, *Lælia*, *Odontoglossum*, *Masdevallia*, and *Cypripedium*.

Class III.—Species and varieties of the genera *Oncidium*, *Epidendrum*, *Dendrobium*, *Vanda*, *Saccolabium*, *Aerides*, and *Stanhopea*.

Class IV.—Single plants of any Orchid.

Class V.—Hybrid Orchids—*i.e.*, those raised by cross-fertilisation. It is hoped that the parents will be shown, if possible, with the hybrid.

Class VI.—Orchids in fruit.

Class VII.—1, Orchids indigenous to Great Britain. 2, Hardy Orchids from any other countries. 2, Cut flowers of Orchids.

Class VIII.—Materials, such as sphagnum and other mosses, peat and other soils, baskets, rafts, pots, pans, labels, &c., used in the cultivation of Orchids.

PROGRAMME OF THE CONFERENCE, WEDNESDAY, MAY 13TH, AT 10 30 A.M.

Introductory Remarks by the President. 1, Communication from Prof. Reichenbach. 2, Discussion on the Hybridisation of Orchids. Opening paper by Mr. Harry J. Veitch, F.L.S. 3, Discussion on the Cultivation of Orchids. Opening Paper by Mr. J. O'Brien. 4, Discussion on the Nomenclature of Orchids.

The chief work of the Conference was performed on Wednesday, the Committee assembling in the Royal Albert Hall at 10.30 P.M. to read the papers and conduct the discussion. The two principal papers we are enabled to give by the courtesy of the authors, and further particulars respecting the discussion will be given in a future issue.

At the close of Mr. O'Brien's paper, the President intimated that the Trustees of the Veitch Memorial had placed three medals at the disposition of the Royal Horticultural Society, to be awarded in such manner as the Committee of the Conference might think fit. One was awarded to Professor Reichenbach for his labours in connection with Orchids, one to the Rev. C. P. Parish, late of Moulmein, for numerous introductions of valuable Orchids, and the third to Mr. Seden, Messrs. Veitch & Sons' successful cultivator, for his assiduity and success in the hybridisation of Orchids.

On Wednesday morning the Prince of Wales, attended by numerous gentlemen, visited the Exhibition.

We make no apology for occupying so much space with Orchid matter this week, for few, if any, of our readers who are not orchidists can fail to be interested in these remarkable plants, and we will ask them to regard it as a dessert number after plainer and more substantial fare, of which there will again be no lack when the feast of flowers is over.

HYBRIDISATION OF ORCHIDS.

[Paper read at the Orchid Conference on May 13th by Mr. Harry J. Veitch, F.L.S.]

IN a communication "On Hybridisation among Vegetables," by Dean Herbert of Manchester, published in 1847, in the second volume of the *Journal of the Horticultural Society of London*, I find the following remarkable passage:—

"Cross-breeding amongst Orchidaceous plants would perhaps lead to very startling results; but, unfortunately, they are not easily raised from seed. I have, however, raised *Bletia*, *Cattleya*, *Herminium monorchis*, and *Ophrys aranifera* from seed; and if I were not, during the greater part of the year, absent from the place where my plants are deposited, I think I could succeed in obtaining crosses in that order. I had well-formed pods last spring of *Orchis* by pollen of *Ophrys*, as well as of other species of *Orchis* which had been forced; and, if I had remained on the spot, I think I should have obtained some cross-bred orchidaceous seed. An intelligent gardener may do much for science by attempts of this kind if he keeps accurate notes of what he attempts, and does not jump at immature conclusions."

This is the earliest authentic information I have been able to obtain of attempts to raise new forms among Orchids by cross-breeding, and with what success the Dean himself has told us in his own words. At that time, and for some years afterwards, there was a prevalent notion among

gardeners that muling among Orchids was an impossibility; and, so far as I am aware, no one attempted it besides Dean Herbert till it was taken up by Dominy at our Exeter nursery about the year 1853. The cause of the prevalent belief of that age in the impossibility of hybridisation among Orchids is not, I think, far to seek.

Dean Herbert was a man of science, and was well acquainted with the structure of Orchid flowers. To him their fertilisation by hand presented no difficulty; to horticulturists and gardeners it was quite different. Not only had they, in common with many others, not the slightest suspicion of the fertilisation of Orchids by insect agency; but, moreover, very few of them possessed even an elementary knowledge of botany. They could, it



Fig. 70.—Seed of *Phalaenopsis*.

Fig. 71.—Seedling *Phalaenopsis*, 4 months.

Fig. 72.—*Phalaenopsis*, 9 months.

is true, distinguish accurately the stamens and pistils of many flowers familiar to them, and they were aware of the functions of those organs, but the confluence of those organs into the solid column of an Orchid flower was to them a profound mystery. It was unfortunate, too, that Dean Herbert's injunction to keep accurate notes of what was attempted was not followed in the early days of Orchid hybridisation, whence the uncertainty that still hangs over the parentage of some of the earlier acquisitions.

It was Mr. John Harris, a surgeon of Exeter, who suggested to Dominy the possibility of muling Orchids, and who pointed out to him the reproductive organs seated in the column, and showed that the application of the pollinia to the stigmatic surface was analogous to the dusting of the stigma of other flowers with pollen. This simple fact being once fairly grasped, the work of hybridisation proceeded apace. The flowers of showy species of *Cattleya*, *Lælia*, *Calanthe*, &c., were fertilised with the pollinia of other species, and even the flowers of supposed different, but of course allied, genera, were also operated upon in the same way. Capsules were produced in abundance, which in due course proved their maturity by dehiscing, and thus the long and anxiously desired seed was at length at hand. Then arose a great difficulty, a difficulty which still exists, and which our long experience has enabled us to make only a short step towards overcoming—to discover the most suitable method of raising seedlings and getting them established. The seeds of Orchids are minute chaffy bodies of extreme lightness. So minute are they that an ordinary pocket lens is powerless to enable one to know whether the seeds are likely to contain a germ or are mere lifeless dust. When growing wild it is evident that the contents of the mature capsules after dehiscence are more or less scattered by the wind, perhaps wafted to great distances until they settle on the branches of trees, on shelving rocks, or other suit-



Fig. 73.—*Phalaenopsis*, 15 months.

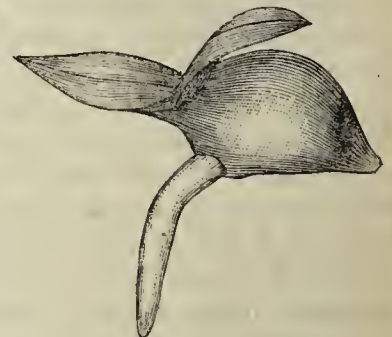


Fig. 74.—*Phalaenopsis*, 22 months.

able situations where the seeds can germinate and the seedlings firmly affix themselves. Following, or at least believing that we were following, Nature so far as the altered circumstances of artificial cultivation allowed, every method or available means that could be thought of was brought into request to secure the germination of the seed. It was sown upon blocks of wood, pieces of tree-fern stems, strips of cork, upon the moss that surfaced the pots of the growing plants—in fact, in any situation that seemed to promise favourable results. But as it was in the early days of Orchid hybridisation, so it is now, we seem as far off as ever from hitting upon a method by which at least a moderate amount of success may be calculated upon; failures were at first, as now, innumerable, and numberless such are without doubt inevitable. Among the most cogent causes of failure in the raising of seedling Orchids, there can be no doubt that the altered conditions of climate, especially the deficiency of sunlight, and the artificial treatment to which the plants are necessarily subject in the glass houses of Europe, are the greatest. The capsules neither can nor do attain the perfection natural to them in their native countries, and it is more than probable that, independently of the capsules grown in our houses being the production of cross-breeding, they do not yield a fractional part of the quantity of good seed they would do in their native land. And so with their progeny—the tender seedlings are brought into

life under circumstances so different from what they would have been in their native land, that it is not at all surprising that multitudes of them perish in their earliest infancy. The capsules are not only less perfect in our houses than they would be in a state of nature, but they also require a longer time to arrive at maturity, a circumstance that *must* tell against the progeny. The cause of this is also climatic, chiefly, of course, the enormous diminution of sunlight and sun heat. To make this clear, I will adduce one illustration, and for that purpose I select the New Granadian Cattleyas of the labiata group, because they are amongst the best of subjects for the operations of the hybridist. These Cattleyas have their home chiefly in the ravines and valleys of the Cordilleras, at elevations ranging from 2000 to 5000 feet above sea level, and between the second and tenth parallels of north latitude. The plants, by being transferred from proximity to the equator, where on clear days the sun darts his rays either perpendicularly upon the place in which they are growing, or at a comparatively small angle to them, to a high latitude like ours, where the smallest angle at which the sun's rays can fall upon our houses is about 28°, and that only for a few days at midsummer, an angle which daily increases, till at midwinter it reaches 75°, suffer an enormous

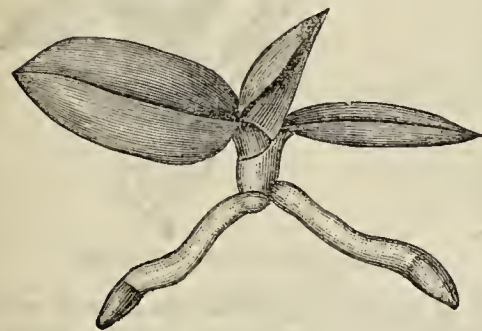


Fig 75.—Phalaenopsis, 2 1/2 years.

diminution of solar light. Now light, in passing through the atmosphere, even under the most favourable circumstances, is subject to absorption, or is intercepted by it, but the amount varies with the angle; thus, it has been shown that, of a given quantity of light falling perpendicularly upon a given point, one-fifth of it is absorbed or intercepted by the atmosphere; if it fall at an angle of 50° more than one-fourth is intercepted, and at

an angle of 75° fully one-half. Hence, in the winter months, even when the days are clear and bright, we can get no more than five-eighths (a little more than one-half) of the solar light these New Granadian Cattleyas receive in their native country, on the assumption that other circumstances remain the same. It is quite evident, then, at what a disadvantage we are placed as regards the ripening of capsules of Orchids whose native home is near the equator, to say nothing of local difficulties, such as the smoky atmosphere and fogs of London.



Fig. 76.—Phalaenopsis, 3 years.

It is not unreasonable to infer, in the absence of more accurate knowledge obtained by direct observation, that the capsules of the New Granadian Cattleyas require but a short period to attain maturity in their native country, and that this period extends only over the two or three months of what is there called the dry season, but which in that region is subject to frequent showers. In our houses the time required for maturing the capsules of Cattleyas of the labiata group ranges from eleven to thirteen months, for *Lælia purpurata* it is about nine months, for *Phalaenopsis Schilleriana* six months, *Cypripedium Spicerianum* eleven to twelve months, *Cyp. insigne* ten months, *Masdevallia* four months, *Calanthe* three to four months, *Zygopetalum Mackayi* when crossed with *maxillare* about six months; *Odontoglossum maculatum*, *Dendrobium aureum*, *Anguloa Clowesi*, *Chysis bractescens*, and *Maxillaria Harrisoniana* each above twelve months. But, of course, these periods are only approximate; the time required for the ripening of the capsules is considerably influenced by the state of the weather and external circumstances, especially by the amount of direct sunlight during the year. I note that our experience does not differ essentially from that of M. Bleu of Paris, who has published in the *Journal of the Société Nationale d'Horticulture* the periods of ripening of the capsules of several Orchids crossed by himself, although it might be expected that in the warmer and drier climate of Paris the periods would be somewhat shorter.

Adverse as are some of the influences under which we work to obtain

capsules, there is but little difficulty in getting them, and in abundance too; sometimes even from crosses that, to the systematic botanist, would seem almost beyond belief; but then comes the *crux*. Good seed is the all-important factor in producing healthy seedlings, and this, unfortunately, from causes already partially adverted to, is obtainable but in a very minute proportion of the whole. Seed we get in profusion, but so little of it germinates that the patience of the most persevering is put to a severe test. The seeds of hundreds of capsules have been sown without yielding a single result. In very many cases only a solitary plant had been raised from a capsule that must have contained thousands of seeds; in very many instances indeed has the number of seedlings from one cross reached a hundred. It is true that we have raised many seedlings in the aggregate, but many of them have appeared when least expected, and when we consider the myriads of seeds that have been sown, and the comparatively few plants raised, we cannot be said to have achieved very great success. It may here be noted that with the exception of *Cypripedium*, which bears the stress of fruit-bearing better than any other genus, many plants bearing capsules become greatly debilitated. During the season the capsule is being matured growth frequently ceases altogether, and when the plant operated upon is not strong it not infrequently perishes even before the seed is ripe.

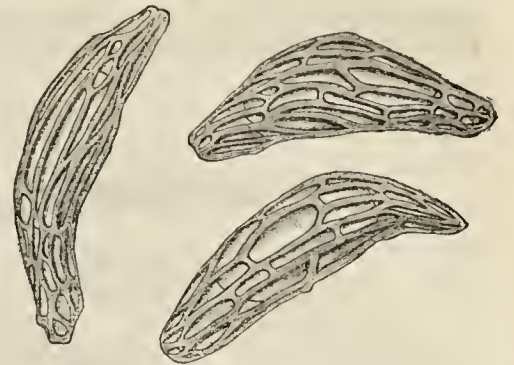


Fig. 77.—Seed of Eucypripedium.

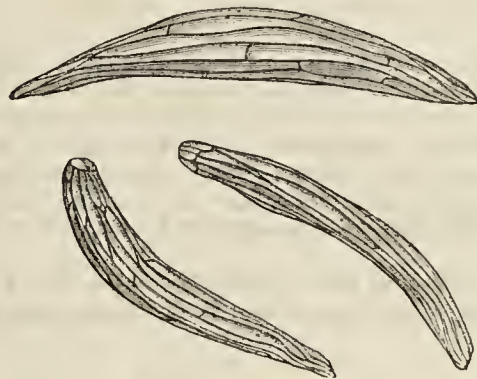


Fig. 78.—Seed of Selenipedium.



Fig 79.—Seedling Cypripedium, 6 months.

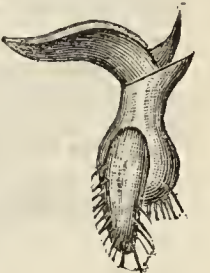


Fig 80.—Cypripedium, 9 months.

If the ripening of the capsules takes place under such adverse influences, the same influences are by no means propitious to the early infancy of the progeny. The period from germination to the formation of the first roots, which, for want of a better phrase and for the present purpose, I will call the thalloid state of the young plant, and which sometimes occupies several months, is the most critical in the life of seedling Orchids raised in glass structures. It is especially so with *Cypripedium*, *Calanthe*, and *Phalaenopsis*, and seedlings of these we accordingly find to be the most difficult to preserve prior to their getting firmly rooted. A succession of dull cloudy days in winter, and even a few hours of London fog, will cause a great mortality, not only among these, but among all seedlings in a similar stage.

The cares and solitudes of the raiser of Orchid seedlings are by no means diminished when the infant plants are fairly rooted; they must be



Fig. 81.—Cypripedium, 12 months.



Fig 82.—Cypripedium, 16 months.

constantly tended with the most assiduous care. To neglect the watering, for instance, for a single day, or even for a few hours in the height of summer, may prove fatal; and so, on the other hand, an excess of coddling, giving them too much heat or too much water, by stimulating them into growth before their natural season arrives, is equally a source of danger. Nor is it the only one. We know of an instance of the splendid *Dendrobium nobile nobilissimum* being crossed with *D. aureum*; the capsule was matured in due course, and the seed sown, but only one seedling was raised. This, as may be readily supposed, was tenderly cared for, but all to no avail; the seedling had grown to about half an inch, when one night a vulgar snail devoured the precious morsel at a single meal. We, too, have

had our troubles. Among our earliest *Phalænopsis amabilis* crosses we succeeded in raising a single seedling from a capsule of *Phalænopsis amabilis* crossed with *P. rosea*, which we were particularly anxious to save, as it would have solved the question of the parentage of *P. intermedia* or *Lobbi*, which is a supposed hybrid between the same two species. The plant had made three healthy leaves; it was well established in a small pot, which, to be the more secure from danger, was placed upon an inverted pot that stood in a pan of water. One morning, to the great dismay of Seden, it was dis-

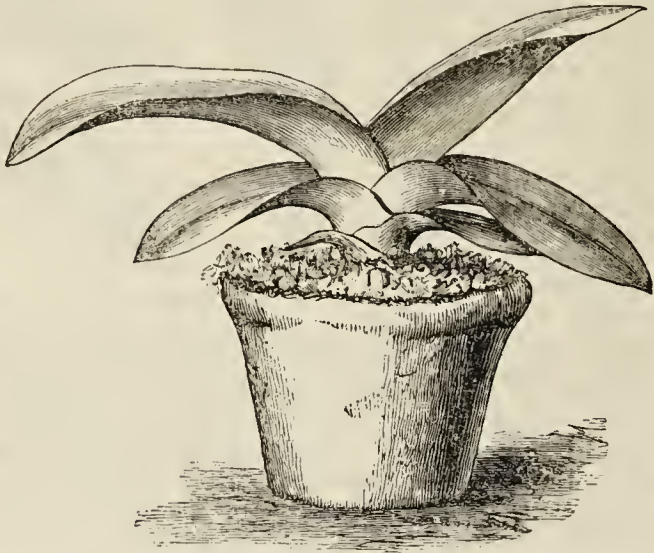


Fig. 83.—Cypripedium, 2 years.

covered that a slug had eaten off two of the best leaves, and would, if not trapped, certainly devour the remainder. Anxious to save the treasure, the plant was watched incessantly for hours in the expectation that sooner or later the marauder would make his appearance; to induce him to do so the moss was constantly plunged into water. The repeated duckings had at length the desired effect, the culprit issued from his lurking place and the plant was saved. The two little circumstances I have narrated speak for themselves.

And now, how long must the hybridist wait before his labours are rewarded with a sight of the flower whose appearance he has been waiting



Fig. 84.—Seed of Dendrobium.



Fig. 85.—Seedling Dendrobium 4 months.

with longing expectation, and upon which many hopes have been built, too often, unfortunately, to end in disappointment?

The shortest periods from the germination of the seed to the production of the flower yet observed are those of *Dendrobium*—that is, *D. aureum* crossed with *D. nobile* and *vice versa*, three to four years; *Phaius* and *Calanthe* about the same; *Masdevallias* four to five years; *Chysis* about



Fig. 86.—Dendrobium, 7 months.



Fig. 87.—Dendrobium, 12 months.

the same. Then come longer intervals: *Zygopetalum* five to nine years, according to the cross. Thus, *Z. maxillare* crossed with *Z. Mackayi* five years, *vice versa* nine years, a curious, but to us unaccountable circumstance, as is the case of *Cypripedium Schlimi* which, crossed with *C. longifolium*, flowers in four years, but the *vice versa* cross takes six years. *Lycaste* takes seven to eight years; *Lælias* and *Cattleyas* may be said to flower from ten to twelve years from the seeds.

[Seedlings of different genera at various stages of growth were here shown.]

I will now glance at some of the results obtained by us from muling. Dominy began to hybridise Orchids at our Exeter nursery in 1853, and continued his operations for some time after removal to Chelsea in 1864. Seden began at Chelsea in 1866, and has worked uninterruptedly from that time to the present. Our experience, therefore, extends over a period of more than thirty years, during which the field of operations has been greatly enlarged, especially of late years, our experiments being made upon

a vast number of cultivated Orchids, including many hundreds of crosses, not only between allied species, but also between species of different genera.

Among the results obtained by Dominy at Exeter, *Calanthe Domini*, raised from *C. masuca* × *C. furcata*, will always be regarded with interest as being the first hybrid Orchid that flowered. It flowered for the first time in October, 1856, on which occasion the spike was shown by my father to Dr. Lindley, who exclaimed on seeing it, "You will drive the botanists mad," an expression quite characteristic of the rigid systematists who flourished prior to the publication of Darwin's "Fertilisation of Orchids by Insect Agency." The first hybrid *Cattleya* that flowered was *C. hybrida*, a plant now lost, but which was soon followed by the flowering of *C. Brabantia*. The first hybrid *Cypripedium* to flower was *C. Harrisianum*, which justly commemorates the name of Dr. Harris. Among other noteworthy acquisitions raised at Exeter were *Cattleya Domini*, *Lælia exoniensis*, *Calanthe Veitchi*, and *Lælia Veitchi*. The last-named flowered for the first time at Chelsea. Dominy also raised some seedling *Vandas*, but they were afterwards lost. Seden's acquisitions are more numerous, and many of them unquestionably prove that substantial progress is being made in spite of the innumerable



Fig. 88.—Dendrobium, 18 months.

difficulties that beset the raising of seedling Orchids. To anyone who has compared *Cypripedium cardinale*, *C. Schroederæ*, and *C. Sedeni candidibulum*, with the original *C. Schlimi*, the progress is manifest enough. And so with *C. cœnanthum superbum*, *C. Læanum superbum*, and *C. Morgania*; nor ought I to omit mention of *Lælia flammea*, still unique in colour among Orchids, *Masdevallia Chelsoni*, *Calanthe Sedeni*, also obtained by other operators, and *Dendrobium micans*.

The following details may prove to be of some interest. Among *Cattleyas* we find that all the members of the *labiata* group and also the Brazilian species with two-leaved stems, as *C. intermedia*, *C. Aclandia*, *C. superba*, &c., cross freely with each other and with the Brazilian *Lælias*, which also cross freely with each other. It is worthy of note



Fig. 89.—Dendrobium, 2 years.

too, that those hybrids that have a two-leaved *Cattleya* for one parent, and a one-leaved *Lælia* or *Cattleya* for the other, have some stems with one and others with two leaves, and the flowering does not seem to be affected thereby. [A plant with this peculiarity here shown.] But neither the *Cattleyas* nor the Brazilian *Lælias* will cross freely with the Mexican *Lælia albida*, *autumnalis*, *majalis*, *rubescens* (better known in

gardens as *acuminata*), &c. Numerous crosses have been effected both ways, and capsules have been produced, but the seed has always proved barren. *Lælia anceps* appears to be an exception, for it seeds freely whether crossed with a *Cattleya* or with any of the Brazilian *Lælias*. The period from the germinating of the seed to the appearance of the first flower varies immensely in the different crosses, thus *Lælia triophthalma* raised from seed sown in 1875 flowered in 1883, this is the shortest period known to us; *Lælia callistoglossa* from seed sown in 1858 flowered for the first time in 1877, or nineteen years, this is the longest period known; the other have taken periods that may be said to average from ten to twelve years.

Among *Cypripeds* some very curious facts have been elicited through muling. Thus, the East Indian species cross freely with each other, and a numerous progeny has resulted therefrom. The South American species, the *Selenipedia*, as they are called, also cross freely with each other, and many new forms have been obtained. The hybrids in both sections flower within a few years from the seed being sown. But in the case of the crossing of Indian with South American species the process has been much slower in producing results. An infinitely smaller per-

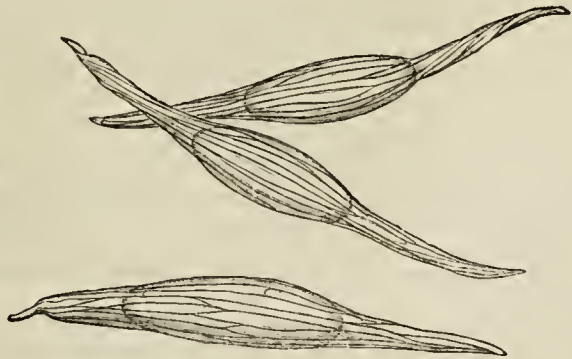


Fig. 90.—Seed of *Cattleya*.

centage of the seed germinates, and those seedlings that survive are so slow at arriving at the flowering stage, that up to the present time not a single plant has produced a flower, although the plants continue strong and healthy in appearance and increase in size every year. One thing is certain, the three-celled ovary of the *Selenipeds* offers no impediment to fertilisation by the pollinia of *Cypripeds* with a one-celled ovary, for we have plants raised from *C. caudatum* × *C. barbatum*, and many other like crosses between other species have yielded seed.

Cypripedium Sedeni was a remarkable cross in many respects; it was in fact raised from two crosses, *C. Schlimi* × *C. longifolium*, and the same two *vice versa*. It will be observed that in this case one of the parents, *C. longifolium*, is much more robust in habit and growth than the other parent *C. Schlimi*. [Plants of *C. longifolium*, *C. Schlimi*, and *C. Sedeni* were here shown.] No perceptible difference was observed between the plants raised from the two separate crosses, they agreed in habit, foliage, colour of flower, in fact in every particular. No such similar result has been obtained by us among *Cypripeds*. A *vice versa* cross between the same two species produces seedlings that vary more or less from those produced from the first cross. Thus *C. tessellatum* resulted from *C. barbatum* × *C. concolor*, and *C. tessellatum porphyrium* from *C. concolor* × *C. barbatum*. We have also an instance of two

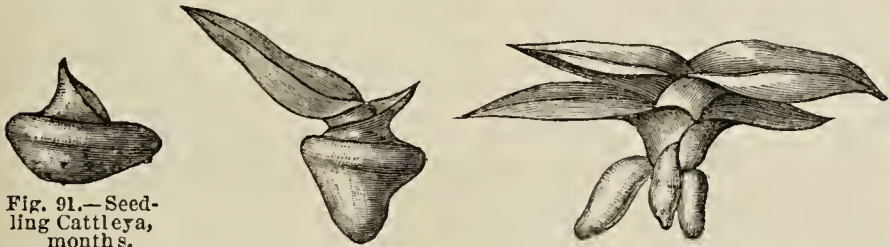


Fig. 91.—Seedling *Cattleya*, 1 month.

Fig. 92.—*Cattleya*, 9 months.

Fig. 93.—*Cattleya*, 12 months.

recognised species each being crossed by a third, but both crosses producing like results; thus *C. longifolium* × *C. Schlimi*, and *C. Roezli* × *C. Schlimi* produced seedlings whose flowers are undistinguishable from each other; although, as might be expected, the foliage of the *C. Roezli* progeny is like, that of its parents, the more robust of the two; hence the specific rank of *C. Roezli* is very questionable.

Not only do recognised species of each section, East Indian and South American, cross freely *inter se*, but the hybrids also cross freely with them. The beautiful *C. cœnanthum superbum* has for its parents *C. Harrisianum*, itself a hybrid, and *C. insigne Maulei*. As regards the habit and foliage of hybrid *Cypripeds*, the progeny usually takes a form intermediate between the two parents, but sometimes it is more robust than either. [Plants of *C. grande* and its parents were shown.]

Large as is the field offered by the great genus *Dendrobium* for the operations of the hybridist, comparatively little has yet been effected. Dominy raised the hybrid that bears his name many years ago in our Exeter nursery. It was followed some years later by *D. Ainsworthi*, which appeared in Dr. Ainsworth's collection at Manchester in 1874. Plants of the same cross raised by West having appeared about the same time in the Fairfield nursery, near Manchester, and later, in the collection of Mr. Brymer at Dorchester by another operator, the parents being *D. aureum* × *D. nobile*. Subsequently Seden raised *D. splendidissimum* from the same cross, and still later Mr. Swan obtained *D. Leechianum* from *D. nobile* × *D. aureum* or the *vice versa* of the others. The seedling;

raised from all the crosses are found to be variable; members of one progeny approaching so closely varieties among the others, that the original distinctions set up between them cease to be appreciable, but without egotism I venture to claim for *splendidissimum* larger flowers with more substance in sepals and petals, caused probably through our having hybridised finer varieties of the two parents. Nevertheless, to avoid confusion, the progenies should, I think, to use an academical expression, be bracketed.

Of the eight hybrid *Dendrobes* that have already flowered *D. nobile* is one parent of five, and *D. aureum* of three of the same five, and of one other, so that only two—*D. micans* and *D. rhodostoma*—have yet flowered that have a parentage in which neither *nobile* nor *aureum* participated.

Crosses between species of *Phalænopsis* have been effected by several operators, and capsules readily obtained. We only know, however, of three instances besides our own where seedlings were raised; the first by Dodds, in 1868, in the collection of Sir John Greville Smyth, at Ashton Court, near Bristol, but they were afterwards lost; then Grey, gardener to the eminent orchidologist, Mr. Corning of Albany, New York, raised some seedlings, but they, too, were afterwards lost; and, lastly, Mr. Hollington, at Enfield, who has, I believe, one seedling still living. Our own experience with *Phalænopsis* dates from 1875. Our first cross was between *P. grandiflora* and *P. Schilleriana*, but with that and with several succeeding crosses no results beyond the capsules were obtained. The first capsule to yield seedlings was gathered from *P. grandiflora* × *P. rosea*; a few of these are still living. Then we obtained a few from *P. amabilis* and *P. rosea*, which grew with more vigour than their elder brethren, and may not improbably flower within the next two years. Still later we obtained seedlings from *P. Schilleriana* × *P. rosea*, *P. grandiflora* × *P. Luddemanniana*, and from two or three other crosses.

Calanthe has probably received attention from more operators than any other genus in the great Orchidean family, a circumstance that can be best accounted for by results being obtainable in a shorter period than from any other genus. It may be that *Calanthe* being more terrestrial than epiphytal, there is a predisposition to earlier maturity. The capsule of *Calanthe* usually ripens in three to four months, and the seed takes

from two to three months more to germinate. The seedlings under favourable circumstances will flower in the third or fourth year; hence it happened that, although seedling *Cattleyas* were in existence before seedling *Calanthes*, the first hybrid *Orchid* to flower was a *Calanthe*. *Calanthe Veitchi* flowered for the first time in 1859, and was at that time believed to be a true bigeneric cross; but such it cannot be now regarded, as Mr. Bentham, in the "Genera Plantarum," has referred the pollen parent *Limatodes rosea* to *Calanthe*. Not so, however, is *Phaius irroratus*, raised by Dominy from *P. grandifolius* × *Calanthe nivalis*, and *P. irroratus purpureus*, raised by Seden from *P. grandifolius* × *Calanthe*



Fig. 94.—*Cattleya*, 16 months.

vestita rubro-maculata, and a third progeny that has not yet flowered, which was obtained by the last-named hybridiser from *Phaius grandifolius* and *Calanthe Veitchi*. These are entitled to be called bigeneric crosses. In one of the cases only a single plant was raised, and in each of the other two the number was very restricted. It is a curious fact, too, that in habit, aspect, and in other respects the progeny is well nigh intermediate between two parents, being neither evergreen like *Phaius*, nor deciduous like *Calanthe*.

Masdevallias were taken in hand at an early date, but failures were frequent, caused probably by the fact that *Masdevallia*, as a genus, is far more heterogenous than was at first supposed, whence a mixture of the different sections may not possibly be effected. *M. Chelsoni* was at length raised from *M. amabilis* × *M. Veitchiana*; then *M. Fraseri* from *M. ignea* × *M. Lindeni* by Mr. Fraser of Dornie, Aberdeen; but the seedlings were reared by us; and lastly, *M. Gairiana* from *M. Veitchiana* × *M. Davisi*. Capsules have been obtained from *M. Veitchiana* × *M. infracta*, *M. polysticta* × *M. tovarensis*, *M. Harryana* × *M. Veitchiana*, and a few others, but all attempts to intermix *M. chimæra* and its allies with the brilliant-flowered species have proved fruitless.

Great as is the difficulty of raising seedlings from *Orchids* requiring a high temperature for their cultivation, it is still greater in the case of those that receive "cool treatment," if we except *Masdevallia*. *Odontoglossum* affords a striking instance of this, paradoxical as it may seem, especially as so many undoubted natural hybrids between different species of this genus have appeared among the importations of the last ten years. Numerous crosses between various species, both Mexican and New Granadian, have been effected, and capsules with apparently good seed have been produced, but with the utmost care that could be bestowed no progeny has yet been raised. Mr. Cookson of Newcastle has, indeed, stated in *The Garden* of February 10th, 1883, that he succeeded in raising a fine lot of *Odontoglossum* seedlings, of which the pollen parent was *O. crispum* and the seed parent either *O. gloriosum* or *O. Uro-Skinneri*,

but which he was not quite sure. He has since informed us that all of them have perished. And so with the Miltonias, usually classed with *Odontoglossum*, and grown in an average higher temperature, as *Vexillarium*, *Roezli*, and *Phalænopsis*. The only seedlings we have been able to raise were obtained from a cross between the two last named, and these were unfortunately lost within a few months after the germination of the seed. I may here note that the late Mr. Bentham, when working up the Orchideæ for the "Genera Plantarum" must, I think, have been misinformed when he states under *Miltonia vexillarium*, page 563, that "fide hortulanorum facile cum *Odontoglossis* variis nec cum *Miltoniis* generis proles hybridas gignunt." Our experience is the very opposite of this. *O. vexillarium* crosses readily with the flat-lipped Miltonias, as *spectabilis*, although thus far we have failed to raise any progeny from these crosses, but not with the true *Odontoglossis*; often as it has been attempted, no capsules are produced. Thus, while our experience in muling among *Odontoglossis* goes far to disprove the statement I have just quoted, it at the same time confirms unmistakably Mr. Bentham's view as to the proper generic place of *vexillarium* and its allies *Roezli*, *Phalænopsis*, and *Warszewiczii*.

I have already taken up so much of your time that I must forbear entering into details of the crossings, and results of them among other genera, and into the scientific aspects of hybridisation it is not my province to lead you. Nevertheless, I may be permitted to refer to a few facts that have come under our observation that have a practical bearing as well as a scientific one.

It will be gathered from what I have already said that our hybridising operations have extended over a rather wide field; that they have not been confined to the crossing of different species of the same genus, but hundreds of experiments have been made between species of different genera. The question thence naturally arises: How will these bigeneric



Fig. 95.—*Cattleya*, 2 years.

crosses affect the stability of the genera as at present circumscribed? And what changes of nomenclature will be necessary to place the Orchideæ on an intelligible basis as regard names? Glancing over the whole range of our operations, and the results obtained from them, I may safely reply that thus far the stability of the genera is scarcely affected, and the changes in nomenclature need be very few indeed. Leaving the progeny derived from species of *Cattleya* × *Lælia* out of consideration, the last-named genus being confessedly an artificial one, only two bigeneric hybrids have yet flowered; these I have mentioned above, *Phaius irroratus*, and *P. irroratus purpureus*. Many years ago Dominy raised *Anæctochilus Domini* from *Goodyera discolor* and *Anæctochilus Veitchii*. Plants derived from both crosses are still in cultivation, but the names they bear are simply garden names. We have plants, but which have not yet flowered, raised from *Cattleya Trianae* crossed with *Sophranitis grandiflora*, and from *Cattleya intermedia* crossed with the same species of *Sophranitis*. We have besides a seedling whose parents are *Cattleya Trianae* and *Brasavola Digbyana*, but as the last-named is now referred to *Lælia*, this can hardly be regarded as a bigeneric cross. With these few cases I have exhausted the list. But when we enumerate the capsules with apparently good seed that have been obtained from bigeneric crosses, but from which no seedlings have been raised, the list is somewhat more formidable. Some of the most remarkable of these were produced by *Acanthophippium Curtisii* × *Chysis bractescens*, *Bletia hyacinthina* × *Calanthe masuca*, *Chysis aurea* × *Zygopetalum Sedeni*, *Odontoglossum bicktonense* × *Zygopetalum maxillare*, *Zygopetalum Mackayi* × *Lycaste Skinneri*.

But, on the other hand, we have obtained a large number of capsules of the normal size, and to all appearances externally perfect not only from bigeneric crosses, but even between species of the same genus which contained not a single seed. And, lastly, I may note that *Zygopetalum Mackayi* has been crossed with several species of *Odontoglossum* and seedlings raised from some of the crosses, but every one that has yet flowered has proved to be simply *Zygopetalum Mackayi*.

The hybridisation of Orchids by the hands of the cultivator is still in its infancy—we are but on the threshold; and now that muling among them has become a pastime of absorbing interest with amateurs, amongst whom special mention must be made of Sir Trevor Lawrence, Sir William Marriott, Sir Charles Strickland, Mr. Bowring of Forest Farm, Windsor,

Mr. D. O. Drewett of Newcastle, and Mr. Goss of Torquay, it would be rash indeed to attempt to predict what may be in store. But reviewing the sum total of results already obtained, can we, considering the ceaseless watching and assiduous care seedling Orchids require before reaching the flowering stage, look upon them with unmixed satisfaction? How few of the best of them bear favourable comparison with the numberless lovely flowers borne by plants that owe their origin to the unerring instinct of the little winged tribe that unknowingly, and perhaps unconsciously, have performed their allotted task for ages past, and proving by the perfection of their work how inept an operator is man.

I cannot conclude this paper without availing myself of the opportunity the reading of it affords me of publicly expressing my personal obligation to Professor Reichenbach for the great trouble he has taken in examining, reporting on, and naming our various hybrids, to do which has occupied much more of his valuable time than is generally supposed.

THE CULTIVATION OF ORCHIDS.

[Paper read at the Orchid Conference on May 13th by Mr. James O'Brien.]

THE subject of Orchid culture being almost inexhaustible, I shall only be able to touch briefly upon some of its phases, and in doing so, whilst endeavouring to make some remarks acceptable to all Orchid growers, I shall direct them principally towards the amateur. A glance at what has been written on the subject many years ago proves that there may be rules laid down for the culture of any or all of the Orchids, and that a good result once attained may always be secured by following the same line of treatment. Whenever I read a detailed account of the treatment given to an exceptionally fine plant by some grower of forty or fifty years ago, I find that in our practice of to-day we need not depart from it in the least to ensure the same good results, which ought, however, to be attained by us with much less trouble than by those of olden time, by reason of the much better accommodation we have.

Orchids, from the time of the earliest arrivals, have always been appreciated, and as early as the year 1800, when the lovely *Aerides odoratum* and many other showy things were introduced, their habits and culture seem to have been understood fairly well, but the bad construction of the houses and their defective heating by means of flues and other contrivances militated sadly against the culture of the small growers and the varieties requiring cool treatment; and hence, while many continued the culture of the more robust kinds, and attracted visitors from distant parts to see them when in bloom, no general progress was made until the period between 1835 and 1850, which was perhaps the richest in importations of fine handsome Orchids.

During that period the fine discoveries of Messrs. Veitch's collector (Lobb) with *Aerides*, *Saccolabiums*, and *Vandas*; Griffiths with his *Cymbidiums* and *Dendrobes*; Skinner, Barker, and Hartweg, in Mexico, Guatemala, and along the Andes; and other collectors, made quite a revival among the Orchid growers, and the result of new energy being put into the matter was that with some of the showier Orchids such perfection was attained that I fear we could not even now match some of the specimens mentioned as being exhibited at the Horticultural Society's Shows at the famed Chiswick Gardens, where in those days a good collection of Orchids was to be found. Among the best exhibits for many years appear those from Mrs. Lawrence's renowned collection at Ealing Park, that home where our worthy President, Sir Trevor Lawrence, first acquired that love for Orchids which he has turned to such good account in forming and keeping up, always in good condition, the best representative collection of Orchids which was ever got together.

Among the specimens exhibited in 1845-6-7 are enumerated: from Mrs. Lawrence, Ealing Park, *Aerides odoratum*, with sixteen leading growths and between thirty and forty flower-spikes; *Cattleya crispa*, with over twenty spikes; *Saccolabium præmorsum*, covered with bloom; *Epidendrum bicornutum*, with many spikes; *Oncidium ampliatum majus*, with many spikes, forming a head of golden flowers over 4 feet across; and *Odontoglossum grande*, quite worthy of being a leading plant in a collection. J. H. Schroder, Esq., of Stamford Green, is also credited with *Calanthe veratrifolia*, with eighteen spikes, and many other fine plants. J. J. Blandy, Esq., with *Saccolabium guttatum*, with eighteen flower-spikes. R. S. Holford, Esq., of Weston Birt, with *Aerides odoratum*, with twenty-seven to thirty spikes. Sigismund Rucker, Esq., also produced specimens which it is pleasant to read about; and among other things, Robert Hanbury, Esq., in November, 1845, exhibited a robust plant of the autumn-flowering *Cattleya labiata*, with four spikes, bearing sixteen flowers between them, and forming a specimen which any of our best collections would be glad to give room to at the present day.

Of plants described as being very fine in different places forty years ago, but which are yet rare, and in some cases the specimens mentioned are not to be matched, are *Renanthera coccinea*, in the gardens belonging to A. Palmer, Esq., at Cheam, with seven panicles on a plant, each bearing from 100 to 110 flowers, and an equally good one of it in the possession of R. S. Holford, Esq., on one of the panicles of which were 117 of its showy scarlet flowers. Good specimens are also mentioned of the yellow *Calanthe curculigoides*, from the Straits of Malacca; *Angræcum bilobum*, with a dozen long flower-spikes; the rose-coloured *Eulophia guineensis*; and in the gardens of the Horticultural Society, in 1847, a *Lælia superbiana*, with nine large heads of bloom.

These notes show that the love for Orchids, which existed from the time the first plants came into the country, has steadily increased, and that their widely diffused culture of the present day, far from being a modern fashion in flowers, is but the result of the steady progress of that which always existed, and always will exist, as long as that love for flowers, which is one of the chief characteristics of the inhabitants of these isles, remains. For those who want novelty as well as beauty, too, there is as good a prospect still as for those who wish simply for the beautiful, for if we turn to the works of Dr. Lindley, Professor Reichenbach, and other writers on Orchid lore, we there see such a host of lovely things figured or described, but not yet imported, as to prove bewildering even to one, like myself, who has made Orchids a study from childhood. So far as I am concerned I never could see that there was any difficulty

in growing the greater part of our handsomest Orchids, provided the one who took them in hand had a real liking for them, and a determination to use his own eyes and his best judgment for their benefit. In such a case success follows invariably, for Orchids, like the domestic animals, soon find out when there is one who is fond of them about them, and they seem to be happy and to thrive and establish an understanding with such a guardian, indicating to him their wants in many important matters as plainly as though they could speak.

It is this kind of understanding that should be aimed at, as it goes a great way towards securing success, as well as giving pleasure to the pursuer; and it is the existence or the want of this kind of relation between the plants and their master which makes all the difference between a good grower and a bad one—between a healthy collection and a shabby one. Be sure that without someone takes an unfeigned and steady interest in the plants they will not thrive, but if one can be found to be watchful over their interests, and apply what knowledge he can get by what he sees or reads of in other collections, a good measure of success is sure; and hence some of our smaller amateurs, by their diligence and real liking for their plants, often grow things to perfection which have puzzled more scientific men. In growing a general collection of Orchids, however, many stubborn subjects will be met with, but as the bad doers of the past have given way, those of the present will follow, no doubt, in the case of all who steadily persevere. Every point in Orchid culture is of importance, one neglected item often causing failure in some direction or other. Let us glance at a few of the most important matters, beginning with

THE ORCHID HOUSE.

In this particular we certainly have the advantage over those of former years, in that we now have compact, well-ventilated, and comfortably heated structures; but these changes were not made until the Orchid growers themselves took to designing their own houses or advising with the builders about them; and from that time a new era in Orchid culture commenced. The running lights, which were so fond of slipping down in the night, were done away with; the swinging sashes on a level with the plants on the side stages were doomed; those neat little sliding traps at the base of the house, and those convenient top ventilators, substituted, and many other sanitary matters arranged, which anyone may see to perfection in that fine new Cattleya house, and those other recently built structures belonging to William Lee, Esq., at Downside, Leatherhead, where one of our largest, best, and best-housed collections will be found, many of the convenient arrangements in those houses being of Mr. Lee's own designing. At Baron Schroder's, too, at The Dell, Egham, some of the best of our modern improvements, combining usefulness and ornament, will be found; and as the plants contained in the houses are of the best and rarest, a visit to them is a great pleasure to any Orchid grower.

In former times it used to be considered imperative to build the Orchid houses running east and west, and many adhere to that plan still; many also consider that a lean-to or three-quarter-span facing north is the best for *Odontoglossums* and cold-house plants. For my part, I cannot say that houses of any other aspect are not as good as these, provided they be properly arranged in other respects. A north house is certainly very cool, and good for cold-house plants, and particularly *Masdevallias* in summer, but, from the very conflicting evidence I have gathered in different parts of the country, I should say that anyone having houses which they wish to devote to Orchids need not be deterred by their facing this way or facing that, or in building new ones, to greatly inconvenience themselves to make their houses run in any particular direction.

Tolerably low span-roofed houses are the best to build for most Orchids, and in building them no two should be placed together side by side, but each should be built apart, in order to allow of the bottom ventilation being effected by traps opening into the outer air. In some cases where this has been neglected, chambers from end to end, with openings at intervals, and other intricate contrivances, have been resorted to, but all to no purpose, as the houses have gone back to the style of those of very many years ago, and are practically unventilated, as we now understand the word. It is to the even balancing of the ventilation, by means of the bottom ventilators opening into the outer air and the top ones at the highest point of the house, that we, in a great measure, may attribute our much better culture of *Odontoglossums*, *Masdevallias*, *Cattleyas*, &c., than the Orchid growers of former years displayed. Next in importance after the ventilation, comes

THE STAGING.

This, by common consent, seems to be best when an open woodwork staging is raised over a close one, containing either water or shingle, which is kept moist. Some, indeed, grow Moss on this close staging, and Ferns underneath them; but although such arrangement is perhaps beneficial whilst the Ferns keep clean, they are so liable to thrips and other insects that they are better kept out of the Orchid houses in my opinion. The open woodwork staging is certainly very good above the close and moisture-supplying one, and great need of it might be seen formerly in the presence of large numbers of inverted flower-pots for raising the plants.

As a further means of giving moisture and storing rain water, which alone should be used wherever it can be obtained for watering Orchids, too much space cannot be devoted to open rain-water tanks under the stages. Plants watered with rain water alone have a great advantage over those watered with water from any other source, and Mr. Bateman records his opinion that they are not attacked by those small snails which are so troublesome where they abound. From my own observation I can say that I believe there is a good foundation for the statement.

WATERING ORCHIDS.

The watering of Orchids is a matter on which much depends. It is now pretty generally understood that all evergreen Orchids, either terrestrial or epiphytal, require plenty of water when growing freely, and less when not growing; that those which lose their leaves, such as some *Dendrobes*, invariably require a period of rest, during which water is entirely withheld and a lower temperature given; and that *Odontoglossums*, *Masdevallias*, and the other cold-house things, want water summer and winter; but I find the resting or drying-off system is often overdone, and plants injured accordingly, and that in some collections the plants would be much better

if watered all the year round than dried as they are to such an extent that they cannot recover in the growing season what they lose in the so-called resting period.

My own opinion is that any drying-off which causes shrivelling is wrong, and that *Cattleyas*, *Lælias*, and similar plants, if properly potted, do best kept moist, even when not actively growing, but care must be taken to see that they are not in bad peat. As a rule, it would be much better for the plants we often see in small collections if they had one-half the quantity of potting material about them and twice the quantity of water they get given them. Syringing a house of Orchids should never be done, and the syringes should be only used for moistening the staging and back walls, or doing any other work on which it can be certainly employed without harm. When used on the plants the operator cannot tell what he is doing, and in the hands of a thoughtless person the syringe is the most mischievous instrument ever introduced. There can be no rule for its use among Orchids as a means for distributing water, and certainly no benefit that can be set against the loss of young growths and decayed flower-spikes which must follow an indiscriminate use of it.

ON POTTING ORCHIDS.

And now it will be well to notice a few matters connected with the potting and materials used. For growing the epiphytal Orchids, in the early days of Orchid culture blocks or logs of wood were largely used, with, in many cases, wire baskets for the more spreading kinds. These baskets were first made of iron wire, but this being found to be objectionable on account of its rusting, copper wire was substituted. Soon it got found out that Orchid roots and young growths did not like metallic substances, and slate was employed to make baskets of different shapes, which were fitted with wire suspenders. Later on the designs were very varied and fanciful, baskets being made of scollop shells, cocoa-nut husks, rods of hazel, oak, and maple, all of which were found objectionable for some reason or other.

During all this time the ordinary flower-pot was making way, disguised to meet the case by having holes and slits to accommodate the air roots. This fashion of flower-pot at length became extensively used, but as it was alleged against it that it harboured insects, it had to give way to the plain common garden pot, which is now doing such great service. But I am sure that we have allowed the common flower-pot to encroach too far, and that while we beat our predecessors with *Odontoglossums*, *Masdevallias*, and many other things which do perfectly well in pots, we have certainly lost ground with *Saccolabiums*, *Aerides*, and plants of that nature; so much so, that they are but poorly represented in many otherwise good collections. My own opinion is that it is solely through potting them instead of basketing them, and that in pots the chances are against them on many points. Their large fleshy roots do not get the air in pots that they do in baskets, and when potting they are generally placed on the stage too far from the glass, and retain the water given them longer than these plants like.

Against these arguments it is said, with much truth, that it is impossible to suspend everything, and that when baskets are used they are dangerous to the plant when decaying. To this it may be answered, that if it is for the benefit of the plant some means of raising it to a fair distance from the glass should be found, and that if the *Saccolabiums* and *Aerides* have done well in baskets, which would have done badly in pots, the trouble of removing the old basket and replacing it with a new one ought not to be considered. The Orchid specimens at Mrs. Lawrence's, that with twenty spikes at Mr. Blandy's, and all the others in those days were in baskets, and I do not think their equals will ever be found in pots.

The Orchid baskets, too, are so much improved in the present day that all objection to them has been removed, and I venture to predict a great future for them. Those made by Mr. J. E. Bonny of Downs Park Road, Hackney, are well finished, and the superior teak of which they are made will cause them to last for years. Those of Mr. Wm. Gordon of Twickenham, too, are excellent, being made of teak and well put together; and I should like those who are not satisfied with their *Saccolabiums*, *Aerides*, and smaller *Vandas* to try them in baskets, using plenty of crocks and charcoal where obtainable, and only a little sphagnum moss.

In growing this class of plants, if the growers would but take the hint from the *Dendrobes*, which grow with them in their native habitats, and make the growing time of the *Saccolabium* to correspond with theirs, they would give their plants less heat and water in winter and more in spring and summer, and a better condition would come upon them. The excessive heat which is often given to *Saccolabiums* and *Aerides*, and given, too, in winter, and while they are so far away from what little light there is, stunts them, prevents their flowering, and makes it hard work for them even to live.

MATERIALS FOR POTTING.

Now as to materials for potting. Good living sphagnum for *Saccolabiums*, *Aerides*, *Vandas*, *Phalænopsis*, *Angræcums*, and others of like growth, and the fibre of peat composed of Fern roots alone for *Cattleyas* and *Lælias*, have always been considered the best. Unfortunately, much of the peat of late years has been of Grass and Heath root, which is liable to rapid decay, and consequently to cause injury to the plants. Various materials, such as cocoa-nut fibre, have been advanced to supersede peat, but none has proved acceptable. I therefore recommend all who wish their plants well to keep to the sphagnum moss and the best peat they can get, using the less of the latter when it is not good, and to leave experiments to others. There are always plenty ready to try new things, and curiously enough it is never the learner who carries the experiments to a serious conclusion, but the well-tried old hand, who, having done all that is good and reasonable, goes in for a new idea on a large scale.

I can call to mind several unaccountable instances of this kind, in one of which I remember a clever grower in the north, who had for years grown his plants to perfection, suddenly became possessed with the idea that chopped sphagnum, and what appeared to me to be road-grit, was the proper thing for all Orchids, and forthwith he proceeded to put them in it. In another case I found that a previously well-grown collection had been potted in sphagnum moss and what I was told was prepared cocoa-nut fibre. How effectual the preparation was in getting the plants ready to depart this life I need not say.

[Above all things a steady perseverance in what others have found to be

a correct method of treatment answers best, and it is better to leave doubtful experiments to their originators until they are proven. The worst of it is that wonder-workers are never tired of getting others to injure their plants by trying their schemes, and hence much mischief occurs. For my part, I have generally found that the extreme practices which we hear of from time to time in the end only go to prove the extraordinary tenacity of life in Orchids, and their adaptability to the different kinds of treatment they must necessarily receive at different hands.

SHADING AND HEATING.

Next comes the shading and heating of the Orchid house. With respect to the shading, I am convinced that all Orchids should be shaded against the direct rays of the sun, and that the shading should, where possible, be varied in thickness according to the plants contained in the house. Some of those very thin materials we see exhibited, when strengthened with webbing, do admirably for *Lælias* and other Mexican and Brazilian plants; the medium textures for *Cattleyas*, and the thickest for *Cypripediums*, *Masdevallias*, and all cold-house plants, all East Indian Orchids, and all terrestrial Orchids, such as *Calanthe veratrifolia*, *Phaius Wallichii*, &c. These grow in dense jungles, and bright sunlight dwarfs them and altogether spoils them.

I saw a remarkable instance of this recently in a garden where a *Calanthe veratrifolia* had been kept in a sunny house for years, and had always been a miserable and stunted object. At length it was placed out of the way on the centre bed, and underneath the tall plants, which effectually hid it from view. In a very short time it became a robust free-flowering plant. I have seen many similar cases where excessive sunlight under glass has had much the same effect as excessive cold would have done. I therefore assert that although most Orchids require a clear light, yet when grown under glass all of them should be sheltered from the unbroken rays of the sun from the time it gets the power to injure until its power wanes. For Orchids in flower a thick shading is absolutely necessary, as the flowers last twice as long shaded, and draw on the strength of the plants much less than they do when exposed to the sun. As regards the heating of Orchid houses, I early found that it was necessary to have some plan, and to adhere to it, checking it by the thermometer. I therefore compiled the following scale for the whole year:—

TABLE OF TEMPERATURES FOR ORCHID HOUSES.

Months.	Warm House. East Indian.		Cattleya, or Inter- mediate House.		Cool, or Odonto- glossum House.	
	Day Degrees	Night Degrees	Day Degrees	Night Degrees	Day Degrees	Night Degrees
January	65-70	60	60-65	55	50-55	45
February	65-70	60	60-65	55	50-55	45
March	65-70	60	60-65	55	55-60	50
April	65-70	60	60-65	55	55-60	50
May	70-75	65	65-70	60	60-65	55
June	75-80	70	70-75	65	60-65	55
July	75-85	70	70-80	65	60-70	55
August	75-85	70	70-80	65	60-70	55
September	75-80	70	70-75	65	60-65	55
October	70-75	65	65-70	60	60-65	55
November	65-70	60	60-65	55	55-60	50
December	65-70	60	60-65	55	50-55	45

Degrees Fahrenheit. The higher day temperature to be attained by sun heat when possible.

This scale cannot, of course, be followed to the letter, neither is it necessary that it should be; it is intended rather to give a basis on which to operate, to enforce a strict guard over the regulation of the heating, and to the preserving of that lower night temperature which is of such vital consequence to the plants, and which should in all cases be insured by night ventilation and by every other means at command. In summer the prescribed temperature will often be exceeded, but it hardly matters by how much if the extra rise is due to sun heat, and the houses in which the plants are are properly shaded and kept moist.

ARRANGEMENT OF THE PLANTS.

And now the manner of the arrangement of the plants in the house demands attention, as I am bound to confess that in all ages of Orchid culture, even down to this day, a great mortality has always prevailed among small-growing plants; this arises probably, in many cases, from excessive heat and too little air, but in by far the greater number of cases by the lesser plants being made to occupy the front portions of the graduated stages, thus reversing the proper order of things, and placing the strong plants near the glass and the weak and dwarf ones the farthest from it. From this cause I am sure the periodical scarcity of the *Ionopsis*, *Trichocentrum*, *Comparettias*, *Barkerias*, and such-like frail things may, in a great measure, be attributed to the distance they are grown from the glass. Indeed, it is of the highest importance that in general practice some attempt should be made to arrange the plants with relation to the distance from the glass of the roof according to their height and general growth. Hence, the very smallest should always be grown on blocks, rafts, or in baskets or shallow pans, and the others arranged according to their heights, as nearly as the necessity for occupying all the staging will permit.

Allowing 1 foot from the glass as the safety line, a good rough rule may be laid down that every small or medium-sized true epiphytal Orchid will do best if brought to within its own height of that line; thus, if a plant is 12 inches high it should be brought to within 2 feet of the glass of the roof; if 1 foot 6 inches to 2 feet 6 inches, and so on until the larger and stronger-growing kinds which will do in any position are reached.

The rule should be approached as nearly as possible with small things, but with large ones a distance of 3 feet from the glass is a convenient and good one. Of course, this rule, like every other in such an elastic matter as Orchid culture, cannot be adhered to in all cases, but if steadily kept in mind and followed where practicable, it will be found of the greatest service in preserving the delicate subjects. *Cypripediums* *Masdevallias*, cool-house

Orchids generally, and terrestrial Orchids, although requiring some consideration in the same way, are not included in those which it is absolutely necessary to arrange after some modification of the before-mentioned plan. I may also add that fumigation, which is so injurious to many Orchids, claims many victims from the small growers, and it is best for each grower to find some safe liquid insecticide than to resort to fumigating at all.

And now after I have endeavoured to gain converts by showing that Orchid culture is a pleasant occupation to those who possess some skill and much diligence, and who are willing to observe Nature and follow her dictates in the culture of their plants, demanding of them only twelve months' work in a year, exercising their judgment in all cases to the best of their ability, and maintaining the most scrupulous cleanliness in houses, plants, and everything around their plants, let me finish with a few observations as to the cost of the plants.

THE COST OF ORCHIDS.

On this head it may safely be said that never were good showy Orchids to be obtained at more convenient prices, and that the present regulation of supply and demand, while presenting to the wealthy collector rare plants for which he must pay well, at the same time offer to him who finds a congenial pastime in tending his one or two little houses of Orchids, plenty of beautiful things as well within the reach of his purse as any ordinary plant would be. Indeed, good things are cheaper now than ever they were, and with the exception of a few very high prices, those realised nowadays are not the outcome of a new Orchid craze, as a comparison with former prices will prove.

Rare things, according to the esteem in which they are held in their day, have always commanded good prices. In March, 1846, at a sale of Guatemalan Orchids at Stevens's, *Coelia macrostachya* realised £10 to £12 10s.; *Barkeria spectabilis*, £5 to £17 each; *Epidendrum Stamfordianum*, 5 guineas; *Lælia superbiens*, £13 to £15; *Mormodes* and *Epidendrum*s, 5 to 10 guineas each; and *Arpophyllums*, £10 to £15 each; the 168 lots realising £600. In 1845 *D. aqueum* fetched £10 a plant, and later on *D. formosum* 15 guineas; other *Dendrobis*, £10 to £12 each; *Oncidium macranthum*, £5 to £8 each. In 1847 the imported plants of *Vanda Lowii* fetched from £10 to £25 each; *Aerides maculosum*, £20; *A. crispum*, £21; *A. odoratum*, £16; and others equally high prices, Mrs. Lawrence, the Earl of Derby, Mr. Rucker, and Mr. Schröder being the principal buyers. Notes taken at the same period also tell us that errors of description were more frequent in former times than in ours. *Ansellia africana* is described as having immense sprays of handsome flowers each as large as a Tulip, and in another case the auctioneer is entrusted with the sale of a bright scarlet *Vanda*.

It will therefore be seen that ever since Orchids were introduced they could command prices according to their beauty or rarity; and so, no doubt, it will continue to be. Let us hope that the now great facilities for obtaining handsome things, formerly very expensive, may, with the aid of the display of their beauties at this Conference, induce many new growers to commence, each according to his means, for out of such ranks our great Orchid growers of the future will be recruited.

THE ORCHID EXHIBITION.

"THIS," said a distinguished orchidist, "is something to be remembered with pleasure while memory lasts," and the opinion was, no doubt, unconsciously echoed by hundreds of the visitors who have had the good fortune to see the wonderful gathering of Orchids at Kensington. Grand displays of floral treasures have been provided by the Royal Horticultural Society on innumerable occasions; but never have they had so complete and satisfactory a representation of a large natural order as that which will render the Orchid Conference memorable in the annals of horticulture. Such a wealth and variety of colours, combined with diversely formed flowers, could be obtained in no other family, and few who were present could fail to be impressed with this fact. From the richest crimsons and purples, through all imaginable shades—except only that favourite colour blue—all gradations were represented, and produced a delightful harmony of hues.

All the leading orchidists in the south of England contributed liberally from their collections, and the Orchid Conference must be, like its predecessors of a similar character devoted to Apples and to Daffodils, recorded as a most encouraging success.

COLLECTIONS OF ORCHIDS IN FLOWER.

The chief portion of the Exhibition was formed by the seventeen groups entered under this head, nearly the whole of the central stage being devoted to them. Two magnificent banks were thus arranged, presenting a wealth of varied flowers far exceeding the expectations of many horticulturists who are familiar with the difficulties attending exhibitions of this character. Never has so large a number of species and varieties of Orchids been assembled in one building before, and an excellent idea could be obtained of the extent, variation, and beauty of the Orchid family.

Very rich in rare species was the collection from Sir Trevor Lawrence, Bart., M.P., Burford Lodge, Dorking (Orchid grower, Mr. Bickerstaffe), which comprised representatives of sixty-four forms, several being uncommonly fine specimens. Especially notable was a good example of *Camarotis purpurea*, a conical mass of stems 3 feet high, bearing about sixty spikes of small but pretty rosy flowers. Amongst some freely flowered *Masdevallias* were notable plants of *M. Harryana cærulescens* with fifty large and richly coloured flowers, and *M. acanthifolia*, also a very handsomely coloured variety with about two dozen flowers. Extremely remarkable was *Ludemannia Pescatorea* with two spikes 18 inches to 2 feet long of curious brownish flowers, having orange-tinted lips. Another rare plant was *Chrysostoma crassifolium*, which has thick recurving leaves arranged in a *Vanda*-like manner, and somewhat resembling the *Angræcums*, bearing a panicle of ten short branches, on which the small white and purple flowers are closely packed. The strange *Cypripedium caudatum* had nearly thirty of its long-petalled flowers, the petals hanging like a lot of narrow ribbons around the plant and pot. The charming yellow and fragrant flowers of *Cattleya citrina* were noticeable amongst the other treasures. A new *Calanthe*, *C. Textori*, one of the *vestita* group, with white flowers and

red-blotched lip; *Bolbophyllum siamense*, flowers dull yellow, and possessing a peculiarly hinged lip swinging about with the slightest motion, were also prominent. *Aerides Veitchii* had a large five-branched panicle, *A. Houletii*, a spike a foot long of yellow and crimson flowers; *Anguloa Clowesii* had four of its large yellow Tulip-like flowers; and *Odontoglossum citrosimum* four long spikes. *Odontoglossum læve* is a pretty species with brown-barred shining petals and sepals, and a bright purple lip. A rarity is *Lycaste Lawrenciana*, not quite so beautiful as some of its relatives, but interesting, the sepals and petals greenish, the lip rose and white. Near it was another little-known *Odontoglossum*, *O. Schillerianum*, which has small flowers, yellow blotched with brown. *Uropedium Lindenii* attracted much attention, as, like its ally *Cypripedium caudatum*, its petals resemble long narrow ribbons, but in this the lip assumes a similar character. Another little curiosity must close the list of the Burford plants—namely, *Dendrobium Harveyanum*, which has bright yellow flowers, the petals deeply fringed like the lip of *D. fimbriatum* or *D. Brymerianum*. With *Cattleyas*, *Dendrobiums*, *Masdevallias*, and *Odontoglossums* of better known forms a handsome group was constituted, well maintaining the fame of the Burford collection.

From W. Lee, Esq., Downside, Leatherhead (gardener, Mr. Woolford), came a magnificent group of healthy plants, examples of seventy-two species, varieties, and hybrids. The lovely *Cattleya Skinneri* contributed much to the rich appearance of the collection, one plant imported in 1884 having had only one year's growth bore two dozen spikes, four to five blooms each, and the specimen was nearly 5 feet in diameter; another in a basket 3 feet square had sixteen spikes, with a similar number of flowers to the preceding. This *Cattleya* was well represented throughout the Show, and grand as are the many forms of *Cattleyas* now cultivated, few can equal this in floriferousness and beauty. The valuable *Cypripedium Stonei platy-tanium* had three fine flowers, the petals nearly an inch in diameter. *Cymbidium Lowianum*, which came out strongly in almost every group, had four spikes, sixteen to eighteen flowers each, the lip deep red. *Masdevallia Schlimii* possesses some attractions, and is certainly very distinct. A plant from Mr. Lee had six spikes of reddish brown and yellow flowers, and by a few other exhibitors it was similarly well shown. *Cypripedium Godefroyæ* was awarded a certificate, the same honour being awarded to Baron Schröder for another plant of this beautiful Orchid. The flowers resemble *C. concolor* in form, but they are white, freely dotted with bright purple—a most pleasing contrast. Of the handsome *Cypripedium marmorophyllum* (*C. Hookeræ* and *C. barbatum*) a fine plant was staged; the pretty white and purple *Leptotes bicolor*, the interesting hybrid *Masdevallia Chelsoni*, *Odontoglossum maculatum superbum*, a very fine variety with large dark flowers like that in our woodcut. *Cypripedium grande*, a hybrid from *C. Roezlii* and *C. caudatum*, was very strong and bore several of its curiously intermediate flowers. The distinct violet purple *Odontoglossum Edwardi*, with numbers of *Aerides*, *Dendrobium thyrsiflorum*, several *Vandas*, and other beautiful plants completed one of the best groups in the conservatory.

It would have been unfitting that an establishment which did so much for Orchids when they were strangers to the majority of cultivators should not be represented at such a gathering as this, and accordingly the Duke of Devonshire contributed liberally from the far-famed Derbyshire garden under the charge of Mr. Owen Thomas. This was the most northern of the groups entered, and it was not therefore surprising that some had suffered in their journey, though the majority appeared none the worse for it. Over forty species and varieties were included, the plants being of all sizes, from the strange *Renanthera coccinea* (not in flower), 10 feet high, to the diminutive *Masdevallias*, only a few inches high, and almost as great proportionate difference was observable in the size of the flowers. Large plants of *Vandas insignis* and *tricolor*, bearing numerous flowers, were prominent in the group. *Dendrobium fimbriatum* and *D. densiflorum* had abundant fine spikes of golden flowers. *Maxillaria Harrisonii* had a dozen white flowers, the lip streaked with purple. The charming little *Odontoglossum nævium* bore several of its small white chocolate-spotted flowers; and *Bolbophyllum Lobbi*, with curious yellow flowers, was, like others of the genus, notable for the peculiar swinging lip. *Masdevallias* were represented by specimens of *M. Veitchiana* in excellent condition, healthy and freely flowered, the varieties distinguished by size and brilliant colour; while of the small-flowered type such species as *M. xanthina*, *M. ludibunda*, *M. psittacina*, and *M. Shuttleworthi* showed their characters well, the last-named being particularly good. *Odontoglossums* of the best types, *Cælogynes cristata* and *Lemoniana*, the former of the late-flowering Chatsworth variety and the latter with its pale yellow-tinted lip; *Dendrobium chrysotoxum*, bearing spikes of bright yellow flowers; and several *Cypripediums*, especially *C. barbatum* with over twenty flowers, furnished considerable attractions.

Though containing a less number of species than those already mentioned, the group from Baron Schröder, The Dell, Egham (gardener, Mr. Ballantine), was unquestionably one of the brightest and most beautiful of all. The plants were marked by a vigorous health, and the flowers by a freshness most satisfactory in a cultural point of view, the arrangement being also tasteful and effective. The collection was also notable for the value of the plants it contained, the principal of the treasures being the celebrated *Lælia bella* with two fine flowers, the lip of great size and of an intensely rich crimson colour. It may be remembered that this is a hybrid from *Lælia purpurata* and *Cattleya labiata*, both well-known and comparatively cheap Orchids, yet the value of *Lælia bella* is estimated at over a hundred guineas. Near it was a magnificent example of *Cattleya Skinneri*, which many visitors uninitiated in the mysteries of Orchid value would probably prefer to its much smaller neighbour; it was 4 feet in diameter, with nearly eighty rich rose-crimson flowers relieved by a white centre in the lip. A choice companion to its brightly coloured relative was the pure white *C. Skinneri alba*, which had five spikes of six flowers each. *Cymbidium Lowianum* was represented by one of the finest plants in cultivation, dark, extremely healthy, with dark green vigorous foliage and seven strong spikes of flowers, the lip tipped with dark red. A grand variety of *Odontoglossum crispum Veitchianum* was honoured with a certificate, and is remarkable for the superb form of the flowers, the sepals and petals broad rounded, the whole flower of smooth outline, white tinged with purple and boldly spotted with brown. Another variety similarly honoured was *O. crispum Sanderi-*

anum, which is very distinct, the sepals and petals edged with a narrow white band, the centre of a peculiar purplish brown hue. *Cypripedium Godefroyæ*, previously noted, was also certificated; and *Maxillaria Sanderiana*, with large white flowers, dark purplish crimson at the base of the sepals and petals, was the fourth plant distinguished by the Committee. *Vanda cœrulescens*, with four spikes; *V. Dennisoniana*, white and yellow; *Ada aurantiaca*, with twenty spikes; *Promenæa citrina*, bearing thirty small yellow flowers; *Calanthe veratrifolia*, with ten tall spikes of pure white flowers; *Phalænopsis Luddemanniana*, *Cattleya intermedia*, and a handsome *Cypripedium Lawrencianum* were a few amongst many other fine plants in the Schröderian group.

The Selborne collection of Orchids at Streatham has gained considerable fame around the metropolis, under the charge of J. Southgate, Esq.'s, gardener, Mr. Salter, and the group contributed to the Orchid Exhibition from the garden will not lessen its celebrity. About sixty species and varieties were staged, and most of these were handsome plants, flowering profusely, and of the most useful or remarkable kinds. To refer to them and those of several other groups in detail would extend our report beyond the pages at our command, therefore we can only mention a few as examples. *Pescatorea Lehmanni*, *Cypripedium Schlimii*, *Lælia purpurata*, *Cattleya Mendelii*, *Odontoglossum Cervantesii* (very fine, twenty-four large flowers), *Dendrobium Falconeri*, *Dendrobium Brymerianum*, *Lælia cinnabarina*, *Odontoglossum citrosimum album*, *Restrepia antennifera*, *Masdevallia Veitchiana grandiflora* (very large flowers), *Oncidium concolor* (ten spikes), and *Cattleya Skinneri alba*.

The experiments with Orchids out of doors, conducted by A. H. Smee, Esq., The Grange, Wallington (gardener, Mr. Cummins), have attracted so much attention that it was especially appropriate to send a collection showing the effects produced by such treatment. The plants afforded several satisfactory indications that they had benefited by the treatment they had received, and in no case did they appear any the worse for their outdoor trial. The following were noteworthy:—*Lycaste Skinneri* varieties, plants established in the open air in 1883; *Masdevallia Shuttleworthi*, from a house without fire heat except on frosty nights, very strong, with twelve fine flowers; *Oncidium concolor*, grown in the open air, July 5th to October 2nd, 1884. Several *Odontoglossums* had been treated in a similar manner and were bearing handsome spikes of flowers; *O. Rossi* being also good. *Oncidium Marshallianum*, *Dendrobium Devonianum*, *Brassia Keiliana*, and several others were shown in equally good condition, the last named having three spikes of five or six flowers each, the sepals and petals long and narrow, brown, the lip white.

Mr. J. Roberts, the Gardens, Gunnersbury Park, contributed a group of Orchids comprising some well-flowered plants of *Dendrobiums*, *Masdevallias*, and *Cypripedium*; but one of his most noteworthy plants was *Vanda cristata*, a species from Nepal with small but curious flowers, the sepals and petals yellowish green, and a bright red three-lobed lip, the two outer lobes diverging from the centre. The strange *Eriopsis biloba* with its brownish flowers was also notable amongst several others.

H. M. Pollett, Esq., Fernside, Bickley, exhibited a prettily arranged group, in which *Odontoglossums* predominated, all the best of the favourite types being represented by strong plants bearing fine spikes of flowers. Much attention has been paid to these plants at Fernside for a considerable time, and as a result an excellent collection of varieties has been formed, of which Mr. Pollett has good reason to be proud. In addition to *O. Alexandræ*, *O. Ruckerianum*, *O. Andersonianum*, *O. triumphans*, *O. polyxanthum*, *O. Pollettianum*, and many others, a central specimen of the distinct and beautiful *O. Edwardi* immediately attracted attention. It had a remarkably handsome panicle 4 feet high, bearing some scores of the dark purplish violet flowers which render this species recognisable at a glance, so different is it from all the other *Odontoglossums*. Very noticeable near to it was a well-grown plant of the beautiful *Cypripedium ciliolare*, with several large neatly marked flowers.

J. T. Peacock, Esq., Sudbury, Hammersmith (gardener, Mr. Vicary), had an interesting collection, in which *Oncidium Marshallianum* and *O. ampliatum*, both thoroughly useful *Oncids*, were remarkable for the size and number of their panicles, the bright yellow colour affording a pleasing contrast with the dark *Odontoglossum Halli*, the lighter *O. crispum* section, and the crimson *Masdevallias* of the Harryana and *Lindenii* types. Abundance of bright flowers rendered this group very effective, and it attracted much attention.

J. C. Duke, Esq., The Glen, Lewisham, contributed a small but choice group of *Odontoglossum vexillarium*, *Oncidium concolor*, and a few other well-known Orchids, but the very distinct *Cælogyne Parishii* was prominent in this collection, a well-grown specimen having seven spikes of green flowers and black-spotted lips. C. E. N. Ingram, Esq., Elstead House, Godalming (gardener, Mr. Bond), had several pretty varieties of *Odontoglossums*, such as *O. polyxanthum*, *O. Ruckerianum*, and *O. Alexandræ*, one hybrid of the last-named type, being especially handsome, with broad deep brown blotches upon a pure white ground. G. N. Wyatt, Esq., Lake House, Cheltenham, staged a group of *Cattleyas*, *Cypripediums*, and *Dendrobiums*, with *Chysis bractescens* and *Ada aurantiaca* in uncommonly good condition, the *Cattleyas*, chiefly *Mendeli* and *Skinneri*, being very healthy and flowering abundantly. H. Little, Esq., Hillingdon Place, Uxbridge, contributed a pretty group of *Lycaste Skinneri* of many varieties, from white to the deepest crimson.

Nurserymen's collections were not very numerous in this section, Mr. B. S. Williams, Upper Holloway, having the most noticeable group, in which *Cattleyas*, *Lælias*, *Vandas*, *Masdevallias*, and *Cypripediums* predominated, comprising a number of excellent varieties such as the Holloway Nurseries are widely noted for. Messrs. Hugh Low & Co., Clapton, had some handsome *Cypripediums*; *C. Lawrencianum*, with three dozen flowers, being probably the finest example of this beautiful Orchid in the Show. *C. lævigatum* had thirty flowers, and several others proportionate numbers. *Dendrobium Jamesianum*, *D. anosmum*, and *D. Lowii* were also well flowered. Messrs. Cypher & Son, Cheltenham, had a large example of *Oncidium sphacelatum*, about 4 feet in diameter and bearing twenty panicles of flowers; *Oncidium Marshallianum*; *Saccolabium præmorsum* with two long spikes; *Dendrobium albo-sanguineum*, one of the *D. Dalhousianum* type, buff and crimson; and *Sarcanthus Parishii* bearing long pendulous spikes

of small flowers, together with *Cattleya Mendeli* and *Calanthe veratrifolia* were the chief features of the Cheltenham collection.

Turning to the classes devoted to particular genera a few of the most important plants shown can only be enumerated, and the illustrations, together with the outlines of the genera, will serve to convey some idea of the character of the display. It should, however, be remarked that the entries were not quite so numerous in this section as would have been desirable and might have been expected; but abundant representatives of each were to be found in the groups that have just been noticed, and undoubtedly added more to the general effect of the Exhibition by being so arranged than they would have done if in separate collections of each genus.

CATTLEYAS.

Of the numerous Central American Orchids which comprise some of the most gorgeous and the most peculiar in the family, the Cattleyas hold a pre-eminent position, and have rendered the name of Mr. Cattley of Barnet, one of the earlier cultivators of Orchids, familiar wherever Orchids are known. In recent years especially Cattleyas have become great favourites, and to meet the increasing demand for species and varieties of this genus collectors have travelled in some of the wildest and least explored regions of Brazil and other portions of the great South American continent, gathering and transmitting to England shiploads of plants, the total value of which would be incalculable. Notwithstanding these large importations,



Fig. 96.—*Cattleya amethystoglossa*.

however, the prices of the best species and varieties still continue high, and some hybrids also realise large amounts. A plant of very moderate size of the beautiful *C. Skinneri* alba will fetch 20 guineas, and for many others proportionate prices can be obtained. Some of the largest amounts that have been paid for these plants are the following—*C. Russelliana*, £44; *C. Blunti*, £42; *C. exoniensis*, 48 guineas; *Cattleya labiata*, 40 guineas; *C. Skinneri* alba, 52 guineas; and *C. Leeana*, over 200 guineas.

Cattleyas possess many qualities which have assisted in rendering them favourites. The flowers are very large—they are, indeed, some of the largest in the Orchid family. They are marked by extremely rich shades of rose, crimson, and yellow; they are very durable either on the plant or cut, and some are most pleasingly fragrant. For producing an effective display they cannot be equalled by any other Orchids, and all who have seen the handsome houses of Cattleyas at Downside and Chelsea will fully recognise their value in this respect. Such species as *C. Trianae*, *C. Mendeli*, *C. Mossiae*, *C. Skinneri*, and *C. Warscewiczii* are particularly useful. *C. gigas* and *C. Sanderiana* are magnificent, and the exquisitely fragrant *C. citrina* is indispensable for a collection of choice Orchids. Representing another distinct type, but equally beautiful in its way, is that of which a flower is shown in fig. 96—namely, *C. amethystoglossa*, a Brazilian Orchid of moderate height, flowering at the present time. The flowers are usually rosy tinted with bold deep purple spots upon the sepals and petals, and a bright purple lip, but several varieties have been introduced, some having a yellow ground colour instead of that named above. All, however, are extremely pretty.

About thirty species of Cattleyas are known, but the varieties are innumerable, and all are natives of Central America, being found either upon

the stems and branches of trees or growing upon rocks. Many handsome hybrids have been raised within the past twenty years, which have formed important additions to the genus. *C. Loddigesii* was the first introduced species, having made its appearance in 1810, and was followed by *C. labiata*, which Mr. Cattley first flowered, and of which *C. Mossiae* is regarded as a variety. The Cattleyas and Lælias are very closely allied, the character relied upon to distinguish them being the number of pollen masses—namely, four in Cattleya and eight in Lælia, but this has been found variable.

LÆLIAS.

From Mexico, Guatemala, Brazil, and a few other districts in tropical and sub-tropical America we have about two dozen species of this charming genus, some of which share the honours with the Cattleyas as the grandest Orchids in cultivation. Others, from their delicate tints and abundant flowers are unsurpassed in the family as useful plants. In one respect several of the Lælias are particularly valuable, and that is their character of flowering during the winter months, when Orchid flowers are especially welcome. *L. anceps* and its varieties, *L. autumnalis*, *L. superbiens*, *L. acuminata*, and several others in this group are favourites with all, and such early-flowering species as *L. albida* similarly receive a large share of attention. Turning to the summer-flowering species we have a magnificent Orchid in *L. purpurata*, which with its pure white sepals and petals and rich purplish crimson lip is entitled to rank with the most handsome of the Cattleyas. Moreover, being of free growth and extremely floriferous, some remarkably handsome specimens are frequently seen in private and trade collections. Of small-flowered species *L. cinnabarina* and *L. harpophylla* may be taken as examples, and the latter with its bright orange-coloured blooms is fast becoming a great favourite, as the tint is uncommon amongst Orchids or other plants. One extraordinary Lælia—namely, *L. bella* deserves special notice. It is a hybrid between *Cattleya labiata* and *Lælia purpurata*, and combines many characters of both parents, but possesses an exceedingly large and richly coloured lip superior to both. Very few specimens of this Orchid are in cultivation and one of these has been valued at over 200 guineas.

Messrs. Sander & Co., St. Albans, had the principal group of these. A fine bank of about sixty large specimens being formed near the centre of the conservatory. *Lælia elegans* and *L. purpurata* were represented by a number of plants, the varieties remarkable for their richly coloured flowers. Some fine forms of *C. Mendeli* were also staged at another place, one named *grandis* well deserving its title. Several lovely white Cattleyas were much admired from the same firm, comprising *C. Blunti*, *C. Trianae* alba, *C. Wagneriana*, a wonderfully fine form (certificated) with enormous flowers and a prominent lip yellow in the centre. *C. Skinneri* alba was similarly beautiful, and *C. maxima* Peru variety (certificated) had broad rose-tinted sepals and petals, and a crimson-veined lip. Mr. W. Bull, Chelsea, showed some fine varieties of *Lælia purpurata*; and H. Little, Esq., contributed *C. Mendeli* and *C. Mossiae* in good condition. De B. Crawshay, Esq., exhibited some Lælias and Cattleyas of much merit, amongst the former being *L. purpurata* alba with a dozen handsome flowers, the sepals and petals fine white and the lip deep crimson. Of the latter, *C. gigas* very richly coloured, *C. Mossiae pulcherrima* delicate rose, and *C. Mendeli leucoglossum* with a yellow lip were the best.

ODONTOGLOSSUMS.

The cool Orchid house has now become an indispensable structure wherever these plants are largely grown, and where there are few it is often the only one devoted to them. In such a house the Odontoglossums are the principal occupants, their wax-like and durable flowers being produced freely throughout the greater part of the year, and are exceedingly well fitted for employment in bouquets, buttonholes, or general floral decoration. They have accordingly advanced steadily in public favour, until at the present time it is probable that far greater numbers of Odontoglossums are in cultivation than of any other genus of Orchids. One amateur states he has 10,000 plants of *O. Alexandræ*, and a large firm claims to have 100,000 of the same species, while of the few Orchids grown for market purposes this is the principal. Indeed the remark made respecting the number of plants of the whole genus in English gardens is equally applicable to *O. Alexandræ*, which undoubtedly far outdistances any other Orchid in the total numbers, and importations are still arriving. In few other genera is there so great a disparity in the value of the varieties as in the Odontoglossums, for while ten or twelve guineas have been paid for forms of great excellence, a less number of shillings will purchase an ordinary variety, and some which twenty years ago would have been readily bought are now considered worthless. *O. Pescatorei* similarly differs considerably in the beauty of its varieties, and proportionately in their value, the finest of this type being *O. Pescatorei Veitchii*, which has rich violet purple spots and bars upon a pure white ground. *O. cirrhosum*, *O. cordatum*, *O. gloriosum*, *O. grande*, *O. Halli*, *O. maculatum*, *O. nævium*, *O. nebulosum*, *O. odoratum*, *O. pulchellum*, *O. Rossi*, and *O. Cervantesii* are well known and beautiful species that have much to recommend them. The large-flowered section, comprising *O. Phalænopsis*, *O. vexillarium*, and *O. Roezli*, which require warmer quarters than most of the others, are now regarded as Miltonias, which they resemble closely in general appearance.

The Odontoglossums are all American, but they are widely distributed, and are found in several districts at great elevations. Mexico, Guatemala, and Peru yield the greatest number of species, some as *O. Alexandræ* being found upon the mountains at an elevation of 7000 to 8000 feet above sea-level.

The species selected to illustrate the Odontoglossums—viz., *O. maculatum* (fig. 97), on the score of showiness has, perhaps, little claim to notice, yet the neat flowers have some attraction, and wherever it is desired to form a collection of the best species it should by no means be omitted. One recommendation it possesses is that the flowers are produced during the winter and early spring, and, as they last well, a few plants are always useful in imparting diversity to the display of Orchids. The flowers are of a yellowish or brownish colour, with a tinge of purple or crimson in the lip that is very pleasing. The regular form and sharply defined outline of the floral divisions are also notable characters, and are well shown in the woodcut, which represents a flower of an extremely fine variety from Mr. Dorman's collection at Sydenham.

Several good groups of Odontoglossum were staged, Messrs. Shuttleworth,

Carder & Co., Clapham, having some pretty varieties of *O. Pescatorei*, *O. triumphans*, *O. Rossi majus*, *O. hystrix*, and *O. Andersonianum*, with many others distinguished by large well-formed and distinctly marked flowers. Messrs. F. Sander & Co., St. Albans, had beautiful groups of hybrid *Odontoglossums* and *O. gloriosum*, the latter most strangely varied. W. E. Brymer, Esq., Ilington House, Dorchester (gardener, Mr. J. Powell), showed some well-grown plants of *O. vexillarium*, *O. crispum*, *O. cirrhosum*, and *O. prænites*, the last named being very prettily marked with brown and yellow. W. Cookson, Esq., Oakwood, Wylam-on-Tyne, sent a remarkably fine hybrid *Odontoglossum* named *Cooksoni*, which was certificated. The flowers are of good size and shape, pure white, with broad bold rich brown blotches; it is one of the most effective varieties in cultivation. F. A.



Fig. 97.—*Odontoglossum maculatum*.

Philbrick, Esq., Q.C., Oldfield, Bickley, exhibited a handsome variety of *O. Wilckeanum*, the flowers yellow, barred with an extremely rich brown shade.

MASDEVALLIAS.

Very distinct from most other Orchids are the Masdevallias in their floral structure, and their three sepals terminating in "tails" frequently several inches long being the most prominent portion, the petals small and hidden, the lip being similarly diminutive and hinged so that it swings about with every motion of the flower. With many variations in size and colour, there is yet a strong family likeness existing amongst the Masdevallias, the diminutive *M. polysticta* and similar species being as easily recognised as the gigantic *M. chimæra*. Numbers of the small-flowered forms, however, though interesting structurally, are of little use in gardens, and cultivators look to *M. Lindenii*, *M. Harryana*, *M. Veitchiana*, *M. tovarensis*, and *M. ignea* for a supply of flowers that can be utilised in floral decoration. For such purposes these plants are valuable, and as the majority thrive under cool treatment similar to the *Odontoglossums*, it is not surprising that they have attained so high a place in popular esteem. There has always been some difficulty in importing plants of these Orchids owing to their possessing no pseudo-bulbs as a store of reserve strength during the passage, and the bad condition in which they have often arrived was in the early days of their culture rendered still worse by giving them too much heat. This has been rectified to a great extent now, and many large and healthy collections have been formed during the past ten years. Little has been done amongst the Masdevallias in the way of hybridising, for only two have been obtained up to the present time; one, *M. Chelsoni*, the first successful cross, from *M. Veitchiana* and *M. amabilis*, and the other from *M. Veitchii* and *M. Davisii*, both being very interesting, but scarcely superior to their parents. As with the *Odontoglossums*, much yet remains to be done amongst the Masdevallias, and they might well receive the attention of hybridists who desire a fresh field of labour.

To the great American Continent we owe all the Masdevallias in cultivation, Columbia and Peru yielding large numbers of species, the total number known exceeding 100.

Sir Trevor Lawrence contributed the best collection of Masdevallias, large vigorous plants, with fifty or sixty flowers each, the *Lindenii* and *Harryana* varieties having a splendid effect, while *M. Veitchiana* was magnificent. Of other species the curious brown and yellow *M. Schlimi*, the interesting hybrid *M. Chelsoni*, the peculiar hood-like and dull-coloured *M. trochilus*; and the floriferous purplish *M. Shuttleworthii* (fig. 98) were very good, and a fine variety of *M. ignea coccinea* was notable for the great size of the flowers. Mr. H. Little also sent several Masdevallias, chiefly *M. Veitchiana*, *M. Chimæra rubra*, and *M. Benedictæ*.

CYPRIPEDIUMS.

Though dispersed so widely through the northern hemisphere the species of the genus *Cypripedium* bear a strong likeness to each other in the form of their flowers, and there are few Orchids which are so easily distinguished by the uninitiated as the members of the Lady Slipper family. This is chiefly due to the prominent pouch-like labellum which in most Orchids is strangely formed, but in few large genera is the shape so uniform as in the being now considered. Both hardy and pictorial species, European,

Asiatic, and American, bear this peculiarly modified organ that is so obviously of special importance in the attraction of insects to aid in the fertilisation. The old designation of the British species (*C. Calceolus*), *Calceolus Marianus*, the general title of Ladies' Slippers, and the American Mocassin Flowers, have all been derived from the form of the lip, and the generic name, literally Venus's Slipper, is also a classical rendering of the same peculiarity. The greatest difference is that between the hardy and the tropical species, the latter being evergreen, and the former producing larger lighter leaves that die each year as winter approaches.

Structurally there is a great similarity in the flowers, though they are widely separated from all other Orchids by several strongly marked peculiarities. The most remarkable of these are in the pollinia and column. It is well known that the column of Orchid flowers is regarded as the result of a combination of the pistil with three stamens, and in the majority of species two of these stamens are suppressed, and the anther of one only appears as the pollen masses under the cup at the apex of the column, the stigma being confined to a cavity lower down on the column. In the *Cypripediums*, however, there is a singular divergence from this character: the apex of the column, instead of producing the one anther—i.e., the pollinia has a large flat angular expansion, two anthers being developed, one on each side of the column below the apical plate. This anyone can readily observe by carefully dissecting a flower, and the method by which cross-fertilisation can be effected, if desired, will be at once apparent. So strange a structure has reference to cross-fertilisation by insects, which in several species is effected in a peculiar and interesting manner.

The species are mostly terrestrial in habit, though a few are found occasionally upon trees in their native localities, the deciduous section being confined to the northern portion of the Old and New World, while the others are found in the Indian Peninsula and Archipelago, the warmer regions of North America, and even in Peru. Of the tropical Ladies' Slippers many have beautiful blotched or marbled leaves, the variegation taking the form of irregular transverse bars, or dark green spots and blotches on a lighter ground; and, like some of the *Phalænopsids*, the plants are handsome at all times of the year, whether flowering or not. The leaves are produced in a two-ranked (distichous) manner—that is, they are arranged opposite each other after the style of the *Vandas* and similar plants; they, however, vary considerably in length and breadth, the plain green forms having the most narrow leaves, and usually the longest. None of them produces a pseudo-bulb, though in the case of the hardy species, which lose their foliage annually, this is supplied by a tuberous rootstock, from which the growth is developed each season.

Popularly these plants may be divided into two groups—namely, those with marbled leaves and those with plain green leaves. In the first-named group we have *C. barbatum*, *C. concolor*, *C. Hookeræ*, *C. purpuratum*, and that handsome Bornean species, *C. Lawrenceanum* (fig. 102, page 399), which Mr. F. W. Burbidge introduced for Messrs. Veitch and Sons. This is one of the best. The flowers are of great size, the dorsal sepal being very broad and rounded, distinctly veined with dark purple, the streaks extending from the base to the margin following the contour of the sepal. The petals are tinted with purple, and have a few dark wort-like protuberances near each margin, along which there is also a row of hairs. The lip is brownish with a purple tinge, and the leaves are beautifully marbled with light and dark green. It is exceedingly free, and was well chosen to commemorate the name of Sir Trevor Lawrence, Bart., M.P., who is widely famed as one of the chief Orchid lovers of the present time, and as President of the Royal Horticultural Society has been one of the chief promoters of the Orchid Conference. The green-leaved forms comprise the well-known useful *C. insigne*, *C. Spicerianum*, *C. villosum*, and *C. Lowii*, while the *Selenipediums*, with many of the handsome hybrids which have been raised in recent years, are also included in this group.

In several groups the magnificent *C. Lawrenceanum*, shown in the illustration (fig. 102), was grandly represented, and proved that the favour this species has obtained with cultivators is well deserved. Its broad dorsal sepal and distinct stripes give it a unique appearance. W. E. Brymer, Esq., had several profusely flowered specimens of the white *C. niveum*, which had fifty flowers, *C. albo-purpureum*, and *C. Lawrenceanum*. Mr. W. Bull sent a plant of a new species from India, *C. Mastersianum*, with green dorsal sepals and brown petals and lip. Sir Trevor Lawrence exhibited a beautiful collection, in which *C. barbatum*, *C. Hookeræ*, *C. Argus*, and *C. Swanianum*, the latter a beautiful form with a green striped dorsal sepal and purplish petals and lip. Mr. H. Little sent a plant of the yellow *C. concolor* and a distinct variety of *C. caudatum* named *roseum*.

We are enabled by the courtesy of the Editor of the *Gardeners' Chronicle* to give the portrait of Sir Trevor Lawrence this week, and no doubt many



Fig. 98.—*Masdevallia Shuttleworthii*.

of our readers will recognise it as an excellent likeness of the great orchidist and President of the Royal Horticultural Society.



Fig. 99.—Sir Trevor Lawrence, Bart., M.P.

ONCIDIUMS.

Tropical America is the home of the great family of Oncidiums; but though many of the 200 or more species are found in tropical latitudes, yet some of them ascend to such great heights in the mountains that numbers of the most handsome can be safely included amongst what are termed cool-house Orchids. Still the greater proportion of them require warm treatment, similar to that afforded the East Indian species. Of those which are found at the greatest elevation, perhaps *O. Warszewiczii* is the most remarkable, as it has been observed growing upon Oaks on the mountains of Costa Rica 8000 to 10,000 feet above sea level, and there the temperature in the coolest season falls to 40°, or even below it. The Oncidiums are of epiphytal habit, and they are chiefly treated as such under cultivation; but there are some, especially the strongest, which succeed very well under culture in pots, and there are few which cannot be grown in baskets. One peculiarity of the genus is the enormous length the inflorescence attains in certain species, 10, 12, and even 15 feet being reached by *O. unguiculatum* and others. Yellow, too, is the most prominent colour, and the shades of this from the most delicate lemon to the deepest orange



Fig. 100.—*Oncidium Marshallianum*.

are very numerous. In a few purple hues are found, and perhaps one of the best known of these is the spotted *O. cucullatum*, the flowers of which contrast most strikingly with such types as *O. concolor* or *O. tigrinum*.

One species—*O. Papilio*, the Butterfly Orchid—affords a remarkable

example of the mimicry which renders so many Orchids interesting. The flower closely resembles a butterfly with expanded wings, head, antennæ, &c., and so striking is its appearance that it is said a plant in flower shown at one of the Horticultural Society's meetings many years ago first induced the Duke of Devonshire to pay attention to the Orchid family, and resulted in the formation of the Chatsworth collection. Several other Oncidiums similarly resemble insects of various kinds, and many other curious structures occur in the genus, as, for instance, in *O. heteranthum*, from Kew, noted elsewhere in this report, which has two forms of flowers, one, the larger and most showy, perfect, and the other inconspicuous and sterile.

As useful free-flowering plants many of the Oncidiums are of especial merit, such as *O. ampliatum*, the charming *O. concolor*, now flowering so abundantly in many gardens, *O. cucullatum*, *O. ornithorhynchum*, *O. pulchellum*, *O. Rogersii*, and *O. sphacelatum*, in which bright shades of yellow predominate. To these must be added *O. Marshallianum* (fig. 100), a magnificent Orchid, one of the best in the genus. It has a large broad branched panicle bearing large flowers, the two lateral sepals very small and inconspicuous, the upper being much larger and barred with brown. The petals are still larger, with an undulated margin, bright yellow, barred and blotched with brown in the centre. The lip is of great size, contracted at the base into a claw, which is spotted with bright red, the other portion being rounded, two-lobed at the apex, and of a brilliant clear yellow hue. This grand Orchid was first flowered by W. Marshall, Esq., of Enfield, in honour of whom it is named. *O. nubigenum* is interesting as being found at the highest elevation of any Orchid—namely, 14,000 feet above the sea level.

The lovely *O. Marshallianum*, with its smaller counterpart *O. ampliatum*, were noticeable in most of the leading groups, most of the other species named being represented.

DENDROBIUMS.

A prominent position is deservedly held in Orchid collections of the present day by the numerous species and varieties included in the above



Fig. 101.—*Dendrobium chrysotis*.

genus. Both in beauty and numerical strength it is probably not excelled by any other cultivated genus of Orchids, the Oncidiums and Odontoglossums with the Dendrobiums forming a very large proportion of the total number grown in English gardens. Great diversity in the colours, odours, and forms of the flowers, and a general ready adaptability to cultural requirements, have undoubtedly been the chief means of encouraging this popularity; but it must be further remembered that the majority are natives of the East Indies, occupying regions that have been much explored, the districts being comparatively easily accessible to the plant-hunter. Another point in their favour is that most of them are readily established after importation, and by this means few have been lost as compared with other Orchids. The best forms well merit all the attention they receive, but there are many to be found which are worthless in a horticultural point of view. Of the really useful forms, however, there are quite as many as are needed, and the chief difficulty where only collections of moderate extent can be grown, is selecting a few from such numbers of beautiful species. Few gardens containing a representative collection of plants will be found without some members of this genus, and if only one Orchid is grown it is almost sure to be the general favourite *D. nobile*. Some lovely shades of gold and purple are represented amongst the Dendrobiums, and well grown specimens add greatly to the beauty of an Orchid collection. A good example of this was afforded by Mr. Prinsep's fine plant of *D. nobile*, shown to prove the advantage of his pruning system, and the most exacting could not desire a more handsome specimen. In another section of the genus, those with the flowers in racemes, *D. thyrsiflorum* and *D. densiflorum* are recognised exhibition plants, many a grand example having been contributed to our leading shows. Of other really beautiful forms the following may be selected—*D. Ainsworthii*, *D. Bensoniæ*, *D. bigibbum*, *D. Brymerianum*, with a strangely fringed bright golden lip;

D. crassinode, *D. Dalhouseanum*, *D. Devonianum*, *D. Falconeri*, *D. fimbriatum*, *D. Jamesianum*, *D. Pierardii*, *D. Wardianum*, and *D. chrysotis* (fig. 101) which has rich yellow flowers, the lip with two deep crimson blotches on the centre and closely fringed like *D. fimbriatum*.

All the best of the Dendrobes were contained in the general groups, and are noted under them, but in the class specially devoted to these Orchids W. E. Brymer, Esq., had several good plants, the best being *D. Falconeri* on a block with a number of large richly tinted flowers; *D. Jenkinsi*, a dwarf

and is unquestionably a useful Orchid—namely, *E. vitellinum*, which, with its orange-coloured abundant flowers, is a favourite everywhere. Another species, by no means so well known as it merits, is *E. bicornutum*, which produces ivory-white flowers of wax-like substance freely, and lasts in beauty for a great time. This plant is also interesting from its habitat—namely, upon rocks in the West Indies, especially in Trinidad, where it has been collected in positions fully exposed to the sea, which in rough weather washes over it. *E. cinnabarinum*, *E. nemorale*, and *E. Cooperianum* are also



FIG. 102.—CYPRIPEDIUM LAWRENCEANUM.

species on a block, with thirteen flowers; and *D. densiflorum*, with five good spikes; Robert Whyte, Esq., Pentland House, Old Kent Road, Lee, showing a plant of *Dendrobium cruentum*, which has white petals and petals with a deep red lip.

EPIDENDRUMS.

Interesting in several respects is the great genus *Epidendrum*, though amongst its 400 species there are comparatively few that can rank with the most useful Orchids. Linnæus referred to this genus all the epiphytal Orchids known in his time, and the familiar *E. cochleatum* was one of the earliest of the family introduced to English gardens, having been included in the Kew collection towards the close of the eighteenth century. Scores of species have been sent here since then, but the majority bears flowers of dull colours, very small, or produced near the apex of an exceedingly long flower stalk. One, however, has deservedly found a place in most collec-

attractive plants. America is the home of the *Epidendrums*, but they are widely distributed chiefly in tropical regions.

E. vitellinum was the principal species exhibited, and several good specimens of this were noticeable, one of the best being that from W. E. Brymer, Esq., which had fourteen spikes of eight or ten flowers each.

VANDAS, SACCOLABIUMS, AERIDES, AND STANHOPEAS.

Many beautiful Orchids are comprised in the three first-named genera and in the last some very peculiar plants are included that were favourite when Orchids first attracted attention. The *Vandas*, with the two related genera named after them, are distinguished from many other Orchids by their habit of growth, producing a stem often 10 or 12 feet high and bearing its leaves in two opposite rows. The flowers vary considerably in size, the best-known species, *V. tricolor* and *V. suavis*, having small flowers in racemes borne in the axils of the leaves; but in the blue *V. cœrulea* and in

the magnificent *V. Sanderiana* of recent introduction the flowers are much larger, somewhat the same difference as there is between the small-flowered *Odontoglossums* and *O. vexillarium*. *V. Cathcarti* has yellowish flowers closely barred with horizontal concentric lines of rich brown, which have a peculiar effect. *V. Hookeri* and *V. teres* are very handsome species; and another that is seldom seen is *V. undulata* (fig. 103), which has white flowers, the margins undulated, and not unlike a small *Cœlogyne cristata*. This is a native of Assam, where it has been found growing at great elevations in forests of Pinuses, and occasionally exposed to snow.

Saccolabiums are charming plants of similar habit but not quite so tall, and they produce their small crimson, purple, and white flowers in dense racemes sometimes over a foot in length, and very fragrant. *S. giganteum*, *S. Blumei*, *S. guttatum*, and *S. ampullaceum* are the chief species, all very free and handsome.

Aerides are well-known useful Orchids, especially *A. odoratum*, which has been grown in British gardens for nearly eighty years, and is invaluable in many establishments. *A. crispum*, *A. Fieldingii*, *A. maculosum*, *A. quinquevulnerum*, and *A. suavissimum* are some of the best species, and may be advantageously included in any collection of Orchids.

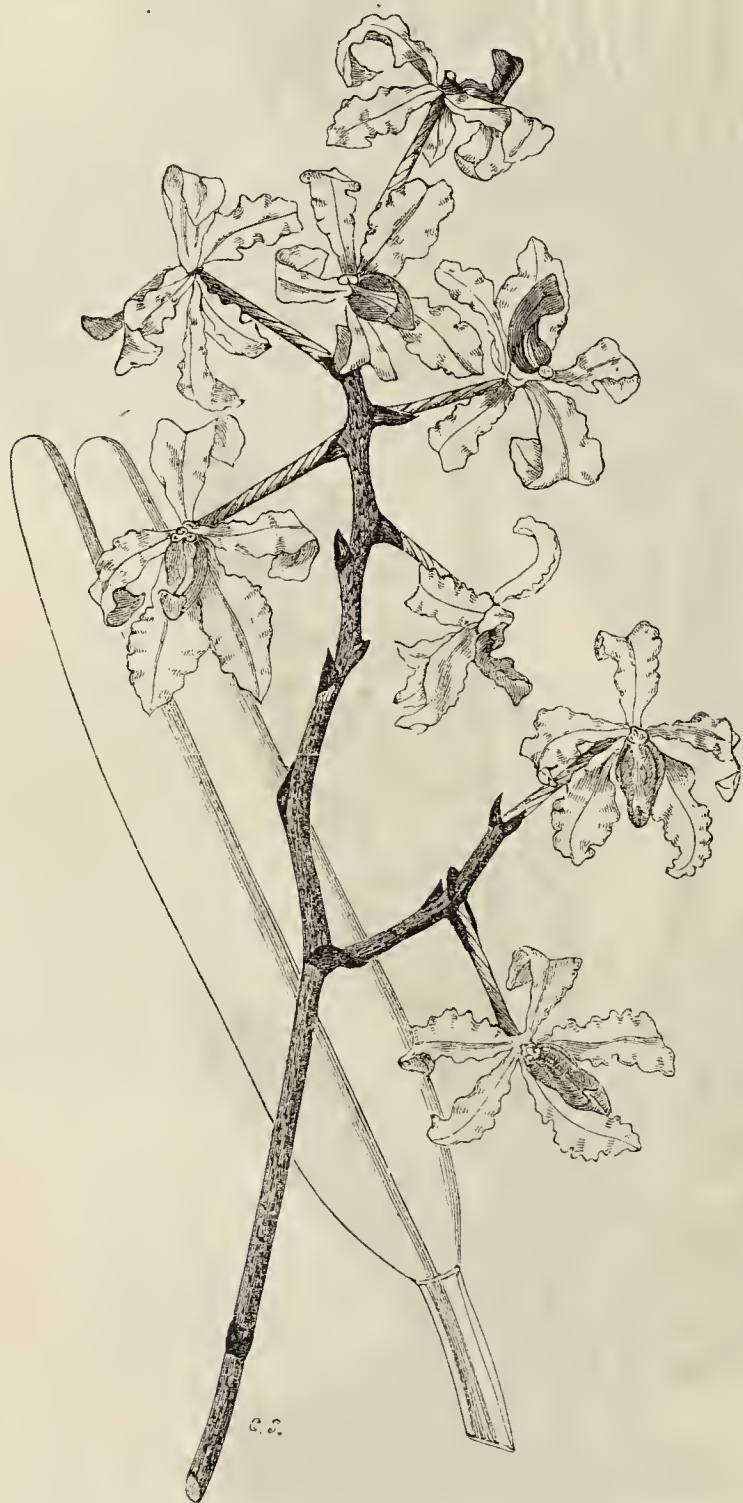


Fig. 103.—*Vanda undulata*.

Stanhopeas are not very much grown now, and except in a few old gardens they are rarely seen. Yet they are very remarkable plants, and with their strong spikes of yellow-and-white flowers spotted with red and brown, they have a most striking appearance suspended from the roof of a large house like the great conservatory at Chatsworth, where a fine collection is grown. *S. Bucephalus*, orange-red; *S. devoniensis*, similar; *S. grandiflora*, white; *S. oculata*, pale yellow and purple; and *S. tigrina*, pale yellow and chocolate, are the best of the species. The three first-named genera—*Vanda*, *Saccolabium*, and *Aerides*—are Old World Orchids, being found chiefly in the East Indies; but for *Stanhopeas* we return to the New World—Mexico, Brazil, and Guatemala furnishing most of the species.

In addition to those already noted in the groups, W. E. Brymer, Esq., had several plants of *Vandas* and *Saccolabiums*, of which the most deserving of attention were *V. tricolor*, with six spikes; *V. teres*, very fine variety; *Saccolabium ampullaceum*; and *S. retusum*. The curious *V. cristata* mentioned amongst Mr. Roberts' plants, while *V. suavis* and *V. tricolor*, with *Aerides* of several species were notable in all the larger groups.

SINGLE SPECIMEN ORCHIDS.

Two specimens of the old *D. nobile* were the most remarkable plants in this class, one from the Hon. Mrs. Portman, Buxted Park, Sussex (gardener, Mr. Prinsep), and the other from the Duke of Devonshire, Chatsworth. (gardener, Mr. Owen Thomas). The first-named was an extraordinary plant, one of those so ably cultivated by Mr. Prinsep on the non-pruning system, and had about three dozen growths from 2 to 3 feet high bearing 500 flowers, one growth having forty-two and another forty-one flowers. Beautiful as was the specimen recently shown from Buxted, in the opinion of many this was even superior; certainly it was a magnificent plant, and Mr. Prinsep deserves great praise for his success. The Chatsworth plant was of great size, 5 feet in diameter, and loaded with flowers, and was greatly admired. Also from Chatsworth came a large *Renanthera coccinea* 10 feet high but not bearing any flowers. Mr. W. Gordon, Twickenham, sent a pretty variety of *Odontoglossum Alexandræ*. The Rev. J. B. Norman had a plant of *Oncidium Kienastianum* with brown and yellow undulated sepals and petals. Mr. M. E. Vervaeet & Cie, Ghent, had several *Lælia purpuratas*, *Odontoglossums*, and *Lælia Schröderi*. B. D. Knox, Esq., Ardnullan, showed *Dendrobium cruentum*, white with an orange lip. Mr. John Laing, Forest Hill, sent a distinct *Cypripedium*. Mr. W. Martin, Blackstone, Hurstpierpoint, had a plant of *Odontoglossum Wilckeanum* with two spikes of sixteen to eighteen flowers each. W. MacDonald, Esq., Woodlands, Perth, exhibited a plant of *Phalænopsis Stuartiana* with adventitious growths upon the roots such as has been referred to recently. The new Plant and Bulb Company, Colchester, exhibited several *Odontoglossums* and *Cattleyas* with imported plants in various stages, from those just arrived to those fully established. W. Cobb, Esq., Silverdale, contributed a plant of *Chysis bractescens* with a dozen wax-like flowers. R. Ewing, Esq., Cheshunt, had a beautiful little plant of the white-flowered *Dendrobium Fytchianum* bearing thirty spikes; and E. H. Adcock, Esq., West View, showed a pretty *Phalænopsis Luddemanniana* with three spikes of its rose, purple, and brown-banded flowers.

From the Royal Botanic Gardens, Kew (Curator, Mr. J. Smith), an interesting group of rare and beautiful Orchids was contributed, but the time of the Conference was rather too early to command the full riches of the Kew collection. A few weeks later and some handsome specimens of *Satyriums*, *Disas*, and other terrestrial Orchids would have added greatly to the beauty of the collection. In few gardens can representatives of 150 genera and over 1000 species be seen, and yet that is the number grown at Kew; and though no attempt is made to produce a great display at one time, a visit can never be paid to the houses devoted to them without finding several of more or less beauty and interest in flower. At Kensington the following were shown:—*Epidendrum bicornutum*, very handsome, with numerous spikes, and a dozen or two flowers. *Oncidium insculptum* with brownish flowers and undulated sepals and petals, in two spikes each 12 feet long. *Cattleya Skinneri alba*, a healthy plant, with six of its pure white flowers. *Masdevallia Benedictæ* in a basket, and bearing over fifty flowers. *Ponthieva maculata*, a very peculiar and distinct Orchid, in which the flower is apparently twisted round, so that the two sepals are uppermost, white spotted with green, and the lower greenish and small yellow lip. *Oncidium heteranthum* (*O. abortivum*), a most interesting plant with a panicle 2 feet long, each branch terminating in a solitary yellow and brown flower similar to many other *Oncidiums* and about half an inch in diameter. The other flowers on the branch below the terminal one are quite different, very small, dull yellow, and composed of five linear equal spreading segments. Only the terminal flower is perfect, and the others are abortive, as the synonym given indicates, the accepted name signifying "diverse-flowered." The pretty *Leptotes bicolor*, now assigned to the genus *Tetramicra*, was represented by a well-flowered plant, the white sepals and petals contrasting very markedly with the violet purple lips. Other noteworthy plants were *Maxillaria luteo-alba* with sixty flowers; *M. triangularis*, *Masdevallia ochthodes*, *M. trichæte*, *Oncidium luridum*, *Thunia alba* in capital condition, *Oncidium luridum*, *Vanda suavis*, *Cœlia Boweriana*, *Polystachya pubescens* with small yellowish flowers streaked with red; *Saccolabium gemmatum*, flowers white and purplish, very diminutive in slender spikes; *Eria excavata*, peculiar dull yellow, possessing a strong odour; *Phalænopsis Parishii*, white with purple lip and dots on the column; and *Masdevallia Chelsoni*, the first hybrid raised in that genus, a cross between *M. Veitchiana* and *M. amabilis*.

ORCHID FRUITS AND HYBRID ORCHIDS.

An interesting collection of Orchids in fruit was staged by Mr. A. H. Smee, showing their diversity in form, and in several cases the injurious effects fruit-bearing produces upon Orchids, the leaves turning yellow and the whole plant evidently suffering. Some of these plants had been grown out of doors last summer, like those already noted. W. J. Cookson, Esq., Worksop Manor, Notts (gardener, Mr. Sutton), exhibited a dish of very fine *Vanilla* fruits, for which the Floral Committee awarded a cultural commendation. Messrs. J. Veitch & Sons, Chelsea, exhibited a group of Orchids in fruit, *Angræcums*, *Odontoglossums*, *Vanillas*, *Phalænopses*, and *Dendrobiums*, the fruits differing much in form—some large egg-shaped or strongly ribbed, and others narrow and cylindrical, like the *Vanilla*, with several intermediate stages.

Hybrid Orchids were shown by several exhibitors, but in very few cases could the parents be staged in flower with them, so that little opportunity of comparison was afforded. Sir Trevor Lawrence had the following six *Cypripediums*, all thoroughly good and well-known forms:—*Cypripedium grande*, parents *C. Roezlii* and *C. caudatum*; *C. Harrisianum*, parents *C. barbatum* and *C. villosum*; *C. marmorophyllum*, parents *C. Hookeri* and *C. barbatum*; *C. Selligerum*, parents *C. barbatum* and *C. lævigatum*; *C. Swanianum*, parents *C. barbatum* and *C. Dayanum*.

Messrs. J. Veitch & Sons also contributed a collection in which *Cypripediums* predominated as follows:—*Chysis Chelsonii*, parents *C. bractescens* and *C. aurea*; *Chysis Sedenii*, parents *C. bractescens* and *C. Limminghii*; *Cypripedium calurum*, parents *C. longifolium* and *C. Sedenii*; *Cypripedium grande*, parents *C. Roezlii* and *C. caudatum*; *Cypripedium marmorophyllum*, parents *C. Hookeri* and *C. barbatum*; *Cypripedium microchilum*, parents *C. niveum* and *C. Druryi*; *Cypripedium Sedenii candidibulum*, parents *C. Schlimii albiflorum* and *C. longifolium*; *Cypripedium superciliare*, parents *C. barbatum* and *C. Veitchii*; *Cypripedium tessellatum porphyreum*, parents *C. concolor* and *C. barbatum*; *Cypripedium vernixium*, parents *C. Argus* and

C. villosum; *Masdevallia Chelsonii*, parents *M. amabilis* and *M. Veitchii*; *Masdevallia Gairiana*, parents *M. Veitchii* and *M. Davisii*. The two *Masdevallias* were very interesting, as they are exactly intermediate between the parents, and the only two at present obtained in the genus. Mr. Vanner, Camden Wood, Chislehurst, showed *M. Chelsonii* with its parents in flower; Mr. Philbrick had *Cattleya Mendelii* (*C. speciosissima* and *C. Devoniensis*) with three good flowers; and Mr. W. Bull had a hybrid *Odontoglossum*, supposed to be intermediate between *O. gloriosum* and *O. crispum*, somewhat resembling the *Andersonianum* type.

The only hardy Orchids represented were a few Orchises and Orphyses from the Hon. Lady Howard de Walden, Mote Park, Maidstone (gardener, Mr. C. Davies) which were obtained from Florence a short time since.

ORCHID FLOWERS.

Some charming contributions in this class were the centre of admiration on Tuesday, but they had lost some of their attraction the following day. Dr. A. Paterson, Bridge of Allan, N.B., had a magnificent stand of flowers most gracefully arranged, and comprising forty or fifty species and varieties of *Oncidiums*, *Brassias*, *Odontoglossums*, *Angræcums*, *Dendrobiums*, *Ansellias*, *Cattleyas*, *Cœlogynes*, *Cypripediums*, *Lælias*, *Saccolabiums*, *Trichopiliass*, and the *Uropedium Lindeni*, which had its long petals looping around the whole stand. Messrs. Ireland & Thomson, Edinburgh, had sixty-four varieties, representing all the best in the leading genera. Messrs. W. Thomson & Son, Clovenfords, showed a choice collection of *Vandas*, representing a number of grand varieties of *V. tricolor* and *V. suavis*, together with flowers of *Odontoglossum crispum* and *Lælia elegans*, all fresh and bright. Mr. W. Gordon; J. Riley, Esq., Accrington; De B. Crawshay, Esq., and W. Thomson, Esq., Walton Grange, Stone, also had good collections of flowers.

CULTURAL MATERIALS.

These occupied considerable space, but we can only briefly mention the several exhibits. Mr. H. G. Smythe, 21, Goldsmith Street, Drury Lane, had samples of Orchid peat, sphagnum moss, teak Orchid baskets, Orchid flower sticks, pots, tying and shading materials, with boxes for conveyance of Orchid blooms by parcels post. Mr. W. Martin, Blockstow, Woodmancote, Hurstpierpoint, showed pots and baskets; Mr. John Matthews, Royal Potteries, Weston-super-Mare, pots and baskets for Orchid culture; Messrs. E. Vervæet & Co., Mont St. Amand, Ghent, soil out of the leaves of Willows, good for *Cattleyas* and some *Dendrobiums*, the substitute for peat used in Belgium for Orchid culture, called "Old Fern Ground," in French "Terre Fibreuse," Belgian sphagnum, some baskets, rafts, &c., of M. Vervæet's own make, used in the nursery; Mr. S. Williams, 21, Farringdon Road, E.C., octagonal teak Orchid baskets; Mr. T. E. Bonny, 88, Downs Park Road, Hackney Downs, E., baskets and rafts; Mr. A. Borwick, Higham Hill, Walthamstow, Jenson and Co.'s cod and potash manure for Orchids; Mr. W. James Epps, Peat Stores, Ringwood, peat, sphagnum, &c.; Mr. W. Gordon, Twickenham, Middlesex, and 40, Duke Street, St. James's, S.W., Orchid baskets, rafts, boats, *Phalænopsis* baskets and boats, *Cattleya* rafts, novel-legged baskets, excelsior scrim, and other Orchid shadings; the Liverpool Horticultural Company, Limited, Garston, Liverpool (Mr. J. Cowan, Manager), Cowan's patent Orchid pottery; and Messrs. J. Kennard & Co., Swan Place, Old Kent Road, Orchid peat, moss, pottery, all kinds of baskets, rafts, labels, and sticks, &c.

The miscellaneous exhibits included a number of paintings and drawings of Orchids. Mr. J. Dominy, 11, Tadema Road, Chelsea, showed twelve plates of the hybrid Orchids raised by him from 1853 to 1880.

Mr. A. Godefroy-Lebœuf, Argenteuil, France, had a number of handsome chromolithographic plates of Orchids.

Dr. A. Paterson sent two oil paintings of Orchids; and Miss Woolward, Earls Court, showed several drawings of Orchids.

A party of the members of the Congress and Fellows of the Royal Horticultural Society to the number of about 100 dined together at the Albion Tavern, Aldersgate Street, on the evening of Tuesday last, after the opening of the Congress, under the presidency of Sir Trevor Lawrence, Bart. Among those present were the Hon. and Rev. J. T. Boscawen, Dr. Michael Foster, Mr. G. F. Wilson, Dr. Hogg, Mr. Godman, Mr. Loder, Mr. Bateman, Mr. Veitch, W. E. Brymer, Esq., M.P., and a host of the leading Orchid growers from all parts of the country. The vice-chair was occupied by Mr. W. Lee of Downside.

AMERICAN EXHIBITION, LONDON, 1886.

BOTANICAL DEPARTMENT.

AMONG the attractions of the American Exhibition to be held in London next year will be a garden comprised solely of American trees, shrubs, and hardy plants; in fact, it is intended that the whole of the Exhibition grounds shall contain no plants except those of North America. The intention is to make a representative gathering of the United States flora, taken in latitudinal and longitudinal directions. The former will represent the characteristic vegetation of each State taken seriatim from New York to California, the latter from the Canadian frontier to Texas and Florida. The Orange and Citron groves of Florida and other Southern States, together with representations of their Cotton, Maize, and Tobacco fields, will be made. As the North American flora is of peculiar richness, such an exhibition will not only be novel, but attractive, for no country is so rich in beautiful hardy trees, shrubs, and herbaceous plants, and an idea of the resources of the North American flora will thus be presented to the visitor at a glance. From the opening day in May till the close of the Exhibition in October it is hoped that the grounds will not only prove interesting and instructive to visitors, but attractive also on account of the peculiar nature of American plants to flower in continuous succession.

With the ordinary American flowering shrubs, such as *Rhododendrons*, *Azaleas*, *Kalmias*, English people are well acquainted, but it is hoped that this Exhibition will comprise large numbers of trees, shrubs, and

plants which are comparatively little known in this country. The wealth of the herbaceous plant flora of the States will be a special feature, and it is intended to import direct from the States representative collections of wild trees and plants, particularly of the most attractive kinds.

DEATH OF MR. CHARLES TURNER.

HORTICULTURE, and especially Floriculture, has sustained a great loss by the death of Mr. Charles Turner of Slough, who has for some considerable time past been in failing health, and who eventually sank to rest early on Saturday morning the 9th inst. at the age of sixty-seven years. For forty years Mr. Turner was a prominent figure in English floriculture—perhaps the most prominent figure. There was no branch of the art which he did not adorn, and no flower which he took under his fostering care ever left his hands that was not improved by the skill he bestowed upon it. Mr. Turner was a native of Salisbury, and began life in the nursery of the late Mr. John Keynes, the noted florist. On leaving Salisbury he came to Chalvey near Slough, where he began business on his own account, and subsequently on the retirement of the Messrs.



Fig. 104.—Mr. Charles Turner.

Brown of Slough, Mr. Turner removed from Chalvey and entered into possession of those nurseries which for so many years have been famous through the enterprise and great business talent which he bestowed upon them. This brief notice must suffice at present. The portrait is taken from Mr. Douglas's work "Hardy Florists' Flowers" by permission of the author, and is an excellent likeness of Mr. Turner in his "best days."

ROYAL HORTICULTURAL SOCIETY.

MAY 12TH.

FRUIT COMMITTEE.—Mr. H. J. Veitch in the chair. The exhibits before the Committee were not numerous, few vegetables and very little fruit being shown. Mr. Fyfe, Thames Ditton House, Thames Ditton, showed two unnamed Melons, one of which, a handsomely netted fruit, received a cultural commendation. Mr. F. Perkins showed several heads of Improved Leamington Broccoli, for which he received a vote of thanks. A cultural commendation was accorded to Mr. Sutton of Worksop Manor Gardens for *Vanilla aromatica*.

FLORAL COMMITTEE.—Mr. Shirley Hibberd in the chair. Orchids of course were in the majority of the plants placed before the Committee, and the following received first-class certificates:—

Cattleya Wagneriana (Sander).—Very large flowers, with pure white sepals and buff-coloured lip.

Cattleya Bluntii (Sander).—Immense flowers, white sepals, lip tinged with buff. A very handsome variety.

Cattleya speciosissima Schröderiana (Sander).—White sepals, rich purplish crimson lip.

Cattleya maxima Peruviana (Sander).—Delicate rose sepals, base of lip deep crimson.

Odontoglossum Ruckerianum punctatissimum (Sander).—Blush white, thickly spotted with brown.

Luddemannia Lehmanni (Sir Trevor Lawrence, Bart.).—Two large and handsome spikes of bloom.

Cypripedium Godefroyæ (W. Lee, Esq. and Mr. Ballantine).—Creamy white, exquisitely marbled and spotted with purplish crimson.

Masdevallia Harryana la'irita (B. S. Williams).—Glowing crimson, a lovely variety.

Rose Alphonse Soupert (Wm. Paul & Son).—Bright carmine.

Rose Etoile de Lyon (Wm. Paul & Son).—Tea, bright yellow.

Odontoglossum excellens (Mr. Ballantine).—Creamy white with brown spots, very fine.

Odontoglossum crispum Sanderianum (Ballantine).—Large reddish brown flower, with white edge.

Odontoglossum crispum Veitchianum (Ballantine).—Prettily blotched with brown.

Maxillaria Sanderiana (Ballantine).—Creamy white; very attractive.

Alpine Auricula Miss Mollie (Douglas).—Velvety purple, with clear yellow centre; large flower.

Anemone thalictroides plenum (G. Paul & Son).—Small double white rosette-like flowers, a gem.

Azalea Prince Baudouin (Louis Van Houtte).—Brilliant crimson. A very showy variety, with large flowers.

Azalea Princess Victoria.—Pale pink. A medium-sized but handsome double flower.

Anemone Ponceau (Bealby).—Brilliant double scarlet, white centre, a very handsome variety.

Pelargonium Volonté Nationale alba (Perkins).—White, faintly tinted with rose.

Votes of thanks were accorded to Sir Trevor Lawrence, Wm. Lee, Esq., and Mr. Ross. To the first-named for a miscellaneous group of Orchids, to Mr. Lee for *Masdevallia Schlimii*, and to Mr. Ross for a collection of cut flowers.

GRAPES SPLITTING.

BELIEVING that a correspondence on this or any kindred subject, while conducted in the friendly spirit characteristic of your correspondent, "Thinker," can have no other than a beneficial influence, I offer a few more remarks on his thoughts in this week's Journal.

I did not say that I believed the expansion of the fluids in the Grapes in the hot atmosphere of the tent was the cause of the splitting of Mr. McIndoe's Grapes. I simply suggested it as a possible cause, for we all know that heat expands most bodies, including fluids.

I quite admit the action both of endosmose and exosmose when circumstances favour such action, but I do not think Grapes hanging in a vinery with the limited amount of moisture in the atmosphere that can be maintained in the middle of summer in our large span-roofed houses are in circumstances to favour the action of the former. Then the difficulty crops up of being able to account for the action of endosmose on one Grape more than another in the same circumstances.

The case rests in my mind thus—I have found the Duke and Golden Champion to be the most vigorous growers and rooters of any Vines I ever grew. In the light rather poor dry soil and climate of Dalkeith Gardens neither cracked or had a spot on them. Here and elsewhere, where with heavier soil and moister climate they both crack during certain states of the weather—after heavy rains with a growing temperature—I have found the use of the gimlet, as already described, a complete remedy for the cracking.

The rationale of this is that the gimlet destroys the action of one-half the capillary vessels of the alburnum by which the sap ascends to the leaves, and limits the supply. The leaves beyond the fruit require a portion of this limited supply of sap for their own sustenance, and have a smaller margin to send down to the berries, yet enough to lead to maturation without causing them to split. I am not alone in my experience in this matter. Mr. Kirk, gardener, Norwood, Alloa, told me more than once that his Grapes of the Duke used to split till he tried the gimlet, and it was from him I copied its use. Previously I cut the laterals half through below the bunches, but I found his system of boring far safer and more expeditious. Those who have often seen the grand examples of the Duke shown by Mr. Kirk at the Edinburgh and other exhibitions will be prepared to adopt any directions he may give for the culture of this Grape, and I know he looks upon the gimlet—much as some are disposed to laugh at it—as one of his sheet anchors in the production of his fine Dukes.

I see a wide distinction between Tomatoes laid down to ripen on hot dry pipes and Grapes under a tent at a flower show, and would not expect the one circumstance to illustrate the other. The hot pipes made a large demand on the Tomatoes for moisture, and they would be likely to shrink instead of split.—W. THOMSON.



PRESENTATION TO DR. HOGG.—The Royal Horticultural Society of Liège have awarded a large silver-gilt medal to Dr. Robert Hogg for his recent contribution to pomology, the new edition of the "Fruit Manual."

— WE are desired to state that MR. BULL'S EXHIBITION OF ORCHIDS was visited by the Duchess of Edinburgh, attended by Lady Emma, Osborne on Tuesday, the 5th inst.

— IN our paragraph last week respecting the INTERNATIONAL INVENTIONS EXHIBITION we omitted to state that Messrs. W. Paul & Son, Waltham Cross, had a beautiful display of Roses near the concert-room; the plants are flowering very freely, and had a most healthy appearance.

— THE usual MAY FROSTS have been doing considerable injury to the early growth and the more tender plants. On Friday last a temperature of 6° below freezing point was registered in several localities around London. It is feared that the fruit has suffered considerably. Choice Rhododendrons have had their young shoots blackened, Beans and other vegetables have been injured, while bedding plants that have been placed out to harden have in several cases been similarly caught. The weather in the north has been much more severe, and we hear that a heavy snowfall occurred over the whole of Upper Deeside on Saturday night. So heavy was it that in less than two hours the depth ranged from 5 inches to 7 inches. No resident in Braemar or Balmoral had ever seen so heavy a storm so late in the season. It is feared that losses must have resulted among sheep, lambs, and grouse.

— MANY of our readers will hear with great regret that MR. GEORGE PHIPPEN, NURSERYMAN, READING, died in the 1st inst. after a painful illness. He was forty-nine years of age, and for about twenty years has taken a prominent part in local horticulture, especially in regard to the Horticultural Society of Reading, which he has assisted most energetically. The Forbury Gardens, belonging to the Corporation, have been under his charge for a number of years, during which time they have been most satisfactorily managed. By his affability and attention to business he gained the respect of his townsmen and of the numerous exhibitors from a distance who have contributed to the Reading shows.

— FLORAL DECORATIONS AT A WEDDING.—In connection with a fashionable wedding held last Thursday at the town residence of the Hon. W. H. B. Portman, M.P., the floral decorations, which were of an extensive character, were most tastefully and successfully carried out by Mr. H. C. Prinsep, the able gardener at Buxted Park. Among the many well-executed floral arrangements which were special objects of attraction were some magnificent specimens of *Dendrobium nobile*, one of which had upwards of 700 expanded blooms of great substance and quality. Particularly well flowered and effective were several plants of *Spiræa palmata elegans*, its crimson inflorescence harmonising beautifully with the light flowers of the *Dendrobiums*. The cut-flower arrangements embraced the choicest flowers, among which were some splendid flowers of *Vanda teres* and other choice Orchids.

— OUR readers must have observed an announcement which has appeared in our advertising columns for some months past of the "TAM O'SHANTER HONE." Mr. Montgomerie, of the Hone Works, Dalmore, Stair, N.B., has sent us specimens of these, some of which are cased, and some uncased. What memories these recall! for we recognise in them the "Water of Ayr Stone," of which artizans were so proud, and which as boys we exulted over the possession of ever so small a piece on which to sharpen our pocket knives. There is no doubt about the utility of these hones. They were noted sixty years ago to our knowledge, and we have never heard that they have been surpassed. But Mr. Montgomerie turns out the "Tam o'Shanter Hone" in a much more smart setting than were the hones of those days. In a handsome French-polished case of sycamore wood, which reminds us of the Cumnock snuff boxes of former days, and adorned with views of Burns' cottage, Alloway

Kirk, and the Banks o'Doon, he has worthily mounted his wares, fitting them for a place in the library, the surgery, or the workshop; while those that are uncased are equally suited for rougher usage in factories and tool houses. We heartily recommend them.

— THE DARLINGTON ROSE SHOW will be held at Southend, Darlington, on Saturday, July 25th inst.

— WE are glad to learn that Mr. W. WARHURST, horticultural builder and hot-water engineer, has so far recovered from a serious affliction of a year's duration as to be able to resume his business, which henceforth will be conducted at 15, Paulton Gardens, Chelsea, in conjunction with Mr. Holliday, the well-known wire-worker, the lease of 33, Highgate Road, Mr. Warhurst's old place of business, having expired.

— TRENCHING GROUND.—Mr. Iggulden desires us to find room for the following extract from a letter received from a friend who has spent many years in the neighbourhood of Richmond, Surrey. He writes:—"There is no trenching done in any of the market gardens about here, and I find on inquiry there is none done about Feltham and Bedfont—both great places for market work. The soil is very light with a gravelly subsoil. They work their ground what we term like a hotbed, a cartload of fresh steaming manure going where we would put two barrowloads. It is ploughed in where there are no trees." Mr. Iggulden thus "claims Surrey and Middlesex, in addition to Essex and Burleigh," as his supporters on this subject.

— THOUGHTS ON CURRENT TOPICS.—"A Thinker" writes:—"I find I made a rather peculiar mistake last week. Just previously to penning my notes on page 371, I had been reading an excellent article by Mr. Bardney on Lilliums in a previous volume, and his name having thereby been impressed on my mind it was inadvertently used in the place of "Scientia." I here offer a spontaneous apology to Mr. Bardney, as I cannot think a gardener so practical as he is would like to be identified with the method advocated by an individual, however scientific, of pulling off the roots of plants to make them grow."

— THE first of a trio of exhibitions of the ROYAL HORTICULTURAL AND AGRICULTURAL SOCIETY OF ANTWERP, arranged to be held at intervals in connection with the Great International Exhibition of General Products, was held on the 10th-12th inst. in the old Flemish city. The display of Orchids was the most extensive ever seen in Belgium; Azaleas were magnificent, Palms and other plants excellent, and altogether a bright and beautiful show was produced, which will be referred to more fully in a future issue.

— AT the ordinary meeting of the ROYAL METEOROLOGICAL SOCIETY, at 25, Great George Street, Westminster, on Wednesday, the 20th instant, at 7 P.M., the following papers will be read:—"The Temperature Zones of the Earth in Connection with its Biological Conditions," by Dr. W. Köppen, Hon.Mem.R.Met.Soc.; "Velocities of Winds and their Measurement," by Lieut.-Col. H. S. Knight, F.R.Met. Soc., F.R.A.S.; "Note on Mr. C. Harding's Paper on Wind Velocities," by Dr. W. Köppen, Hon.Mem.R.Met.Soc.; "Note on a Peculiar Form of Auroral Cloud Seen in Northamptonshire, March 1st, 1885," by Rev. James Davis, communicated by the President.

— A COMMITTEE has been formed for collecting funds for presenting a TESTIMONIAL TO MR. E. R. CUTLER for the great services he has rendered as Secretary to the Gardeners' Royal Benevolent Institution during a period of forty-four years. This second testimonial shows emphatically the high esteem in which Mr. Cutler is held by supporters of this excellent institution.

— MR. JOSEPH MALLENDER sends the following SUMMARY OF METEOROLOGICAL OBSERVATIONS AT HODSOCK PRIORY, WORKSOP, NOTTS., for April 1885:—Mean temperature of month, 45.3; maximum on the 21st, 71.10°; minimum on the 4th, 20.7°; maximum in sun on the 21st, 126.7°. The warmest day was the 21st; the coldest day the 4th. Mean temperature of the air at 9 A.M., 46.8. Mean temperature of the soil 1 foot deep, 45.5°; below 32° on eight nights in the shade, and 13° on the grass. Total duration of sunshine in month, 124 hours, or 30 per cent. of possible. The brightest day was the 17th. We had 11.3 hours, or 81 per cent., and nine sunless days. Total rainfall, 1.89. Maximum fall in 24 hours on the 6th, 0.50. Rain fell on fifteen days. The first sixteen days were cold, but the rest of the month has been rather warmer than the average. The mean is 1.3° higher than last year, but below the two previous ones. Range of temperature, both mean and extreme, large.

The minimum is the lowest in April in ten years, and the maximum has only been 0.1° higher in the same period. Sunshine more than last year, but less than the three previous years. Rainfall about the average. Fruit blossom very abundant and late. Queen wasps very plentiful.

HOT-WATER PIPES.

THE form of joint used by Messrs. Foster & Pearson may be very good. I have never seen them, and therefore shall not attempt to pass any opinion upon them. If I understand the joint rightly from the drawing on page 316 sufficient room is left for the expansion of the pipes, and no expansion valve would be needed on pipes fitted with the joints in question. Perhaps your correspondents will state if this really is the case? I hinted that sediment settling about the face of the valve might prevent them holding back water, and I agree with Messrs. Foster & Pearson on this point; but valves that are worked two or three times daily fail to do this after they have been after a time, but sediment after all may be the cause of the mischief. Joints do not burst without a cause, and the case alluded to by your correspondent is not sufficient evidence for condemning the use of iron filings. Surely when the pipes were not in use they could not burst from the expansion of the metal had not the mischief been previously done, or was not the breakdown due to other causes?

I fail to see in the communication named the hint alluded to by "Thinker" that many pipes fail because they are not worked. Messrs. Foster & Pearson allude to valves failing from this cause, and "Thinker" applies it to the pipes. Perhaps he will think about this; and, as he has proved such to be the case, state why they fail because they are not worked. I can understand pipes bursting if left during winter full of water and allowed to become frozen. It is a good plan to run out the water when the pipes are not in use if practicable, but this cannot always be done.—WM. BARDNEY.

SOOT WATER.

AS a cheap and easily made reliable fertiliser this is of great value. It may be used with much advantage wherever plants are grown in pots. There is no kind of plant it does not benefit, and it may be given to those which produce fruit, flowers, or fine foliage. It has the virtue better than any other fertiliser of clearing worms from the soil in pots, and this is a great gain in itself. No kind of worm will remain in the soil which receives a supply of soot water occasionally, and it causes foliage, fruit, and flowers to assume a much darker colour than they do when it is not used. It imparts extra vigour, and may be used all the year round. Ferns are especially benefited by it, and the fronds assume a deep green colour under its influence. Strawberries in pots, Pines, Vines, Pelargoniums, Fuchsias, and indeed all plants improve in texture and appearance from its use. It may be used to expel worms before the pots are full of roots, but as a general fertiliser it should not be much employed until the roots have taken to the soil freely. It is not wanted until then.

Many have much difficulty in getting the soot to mix with the water, but this is easily enough managed. Any ordinary old bag should be taken; half fill it with soot, put a brick or large stone inside, tie up the mouth, and put it into the tank or barrel with the water. In a short time the water will have penetrated through every particle of the soot any converted it into a pulp. The water is then in excellent condition for use. It may, however, be too strong for giving to the plants as it is, but a quantity of it may be lifted and put into the pans with clear water, the strength to apply it being a matter which can only be determined by the cultivator.—J. MUIR, *Margam*.

USEFUL CROPS.

CELERY AND CELERY TRENCHES.—In small gardens, or say where only two or three rows are planted, these may be disposed in different spots without any great inconvenience or the appearance of disorder. Where, however, a much larger number of rows of plants must be grown a more systematic arrangement is necessary, and a variety of schemes more or less economical is the result. In some gardens the principal portion of the Pea crops and the Celery trenches are worked together, apparently with the best of results. The rows of Peas are necessarily disposed at wide intervals, or say not much less than 6 feet apart, and as a consequence the dwarfer sorts especially derive much benefit from the abundance of light they naturally receive. Then the partial shade afforded by the Peas to the Celery, when the latter is first planted, proves most beneficial, though it must be admitted that it is quite possible to unduly shade and thereby weaken the Celery. Some cut their trenches before the Peas are sown, the soil thrown out on to the manured and deeply dug central spaces adding materially to the depth of extra fertile soil. I may perhaps appear slightly inconsistent in commending a deep root run for Peas, but when the rows are thus disposed at wide intervals there is less danger of too much haulm being formed.

Many delay digging the Celery trenches till after the Peas are staked, for the simple reason that the latter work can be

done much more expeditiously when the men can move about with freedom. In still more gardens, I believe, the Celery trenches are dug according as the rows of Peas are cleared off, and this plan, although it may be convenient, has but little else to recommend it. In the first place the Peas usually leave the ground in a hard impoverished state, the Celery therefore deriving little or no support other than that afforded by the manure dug into the trench, whereas the roots ought to have free access to the surrounding soil, and become almost independent of the watering pot, and in addition forming more solid growth. Then not unfrequently the Peas are not cleared off in time to admit of the Celery being transplanted before the plants have spoilt each other, or it may be other important work interferes with the laborious work of digging trenches during hot and dry weather.

¶ We are obliged to economise both labour and space, and if the Celery trenches are not prepared before the summer bedding out commences it cannot be so well done afterwards. The plan which best suits us is to follow early and successional Broccoli with Celery, and the latter is followed with Peas. At the present time (May 5th), most of the Broccoli is finished, none later than the Leamington being grown on this quarter, and the Celery trenches will at once be dug. By preparing them thus early there is less need to use quite solid manure, the work can be done easily, the plants put out before they are overgrown and whenever showery weather favours the work, and the spaces between the trenches can be cropped during the summer. Our trenches are usually about 15 inches wide and 42 inches apart, this bringing the rows of Celery nearly 5 feet apart. We are told this is much more room than need be given, and so it is I readily admit, but not if the intervening spaces are to be profitably cropped. I do not believe in the practice of placing several rows of plants in one wide trench, or even two rows in a trench, as I am under the impression the gain is a doubtful one, and the moulding up, especially when this is necessarily left to the labourers, is less likely to be properly done. Large sticks of Celery are not desirable, but a sturdy and solid growth is, and this is more certain of attainment when the plants are grown in single rows only. When they are disposed in double rows the plants are usually angled, and 12 inches apart in each row. In a single row they may be planted 7 or 8 inches apart, the slight loss in numbers being more than compensated for in the superiority of the Celery; at least such is my experience.

SUMMER LETTUCES.—Last season we grew some of the finest and best Lettuces I have yet seen, and that too without much trouble. They received no manure, no mulching, and no watering, and yet throughout the very hot and dry weather experienced we had abundance of extra large, perfectly blanched, and very crisp Lettuces. Trenching was not responsible for this success. On the contrary, I claim it as another remarkable proof of the undesirability of frequent digging for all and every crop. For several years past we have grown our best Lettuces and Kidney Beans on the spaces between the Celery trenches, and that is where we had them so good last season. These spaces are not dug before the soil from the trenches is distributed evenly over them, and as our trenches are not deep, or only about half the depth of the blade of the spade, the amount thrown out is, after all, quite trifling. It merely acts as a top-dressing, and may be said to be one of the best mulchings that can be applied. The Lettuces root into the solid and most fertile surface soil, and the growth they make is close and good. I have also noticed that Lettuces grow surprisingly fine when between rows of young Strawberry plants, and as we neither trench for or give much manure to the latter, solidity must again be the reason of their growing so well. If this is not the reason, what is? On dug ground we find our earliest Lettuces make very slow progress unless they have plenty of manure under them, and at present I am not prepared to say they would do any better on solid undug ground.

Many cultivators, amateurs especially, do not give Lettuces anything like fair treatment, as they more often than not sow a pinch of seed in an out-of-the-way spot and neglect to transplant till they are crowded together like Mustard and Cress. Better cut them and eat them as such, rather than waste time and space in trying to grow them to a presentable size. The plants for the earliest crops may be wintered on a sheltered border, or in frames, more be raised early in a box or frame, and to succeed these a sowing may be made on a warm border, but in every case the plants should either be pricked out or finally planted before they spoil each other. During the summer the less transplanting necessary the greater the certainty of a good crop. From the present time till the end of July the seed is best sown thinly where the plants are to be grown in small or greater quantities

according to the demand, and at intervals of about eighteen days. The seedlings require to be thinned out gradually to a distance of about 9 inches apart, any blanks being made good by transplanting with a trowel. On a narrow flat ridge between the Celery rows two rows of Lettuces may be grown, and on a 4-foot width, slightly reduced by sloping the sides, I have frequently had a central row of Kidney Beans, and a row on each side of these of Lettuces. We grow Cabbage Lettuces for late autumn and early spring supplies, but for the principal crops rely exclusively on the Cos varieties, notably any seedsmen's selected White Paris Cos and the Black-seeded Brown Cos. The latter is, on the whole, the very best Lettuce I am acquainted with, and is to be recommended, not only on account of its hardiness, but also because of its superior quality during the hot summer months. Sown at the same time as a Green or White Cos variety it will form a good succession to them, is less liable to bolt quickly, and when the blanching is slightly assisted by tying up, it may fairly be said to surprise those who have been in the habit of relying on the more popular sorts. No other sort strips so well or proves so tender and sweet.

LATE PEAS.—Some of the latest Peas I have yet seen picked were from rows sown on the ridges between the Celery trenches, but according to my experience they scarcely paid for the trouble. At the same time late dishes picked, say, during the latter part of October and early in November, are much appreciated, and we always endeavour to have some. Mildew and frosts are the two great enemies to late Peas. In our case mildew is the most prevalent towards the lower end of our sloping garden, and as early frosts are also much more destructive at the bottom of the garden, we naturally select the highest end and clear of the Celery quarter for late as well as early Peas. We have tried various sorts for this late work, including the early and second early varieties, but find there are none to equal *Ne Plus Ultra*, *Sutton's Latest of All*, and *Sturdy*. The early round-seeded sorts will not "go down" after the tender *Marrowfats*, while the majority of the second earlies are much subject to mildew. A noteworthy exception, however, is the good old *Hair's Dwarf Mammoth*, and those who have it true find this variety of good service either as a second early or late cropper. *Walker's Perpetual Bearer* does not thrive satisfactorily with us, and is not so very superior to *Veitch's Perfection*. It is useless to sow one or two short rows for furnishing these late gatherings, as the crops of pods are usually rather thin, fill but slowly, and are much preyed on by tits and other birds. Narrow trenches similar to those prepared for Celery are suitable for late Peas providing the soil is of a somewhat loose character, but are of no avail on our heavy land, as the sides are liable to shrink and the roots may not be able to leave the trenches in consequence. If these trenches could be frequently filled with water the case might be different, but it is out of the question here. We manure heavily, dig deeply, well breaking up the soil, draw rather deep drills, and do not quite fill these again. The seed is sown thinly, are staked up in due course, the rows are heavily mulched with strawy manure, and till such time as plants are strongly rooted into the surrounding soil it is considered advisable to heavy water the rows occasionally. The sorts named are not much liable to mildew, and rarely fail to yield well. I ought to add that we sow late in May, and again about the middle of June. If the early sorts were grown these would be sown late in June, and again early in July, such sorts as *William I.* being sometimes sown as late as the end of July or early in August, preference being given to the seed saved the same season. In this and many others matters so much depends upon the soil and climate, and we can only advise generally.—W. IGGULDEN.



KITCHEN GARDEN.

Potatoes.—The early-frame crop is nearly over. If quite matured the remainder may be dug up and stored in a dark place for use, and the frame filled with Vegetable Marrows, Cucumbers, &c. Early Potatoes in the open are most promising. Fortunately we have escaped all late spring frosts, and everything has been in their favour. Where there are many shoots coming from the side and away from the main stems draw them up and let the top growth be confined to the main growths. Where any artificial manure is to be applied to them shake a handful or two

around each stem, and then earth them up. Earthing up steadies the stems and prevents the surface tubers becoming green and useless. The proper time for earthing is when the stems are from 6 to 8 inches high.

Peas.—Sow largely for autumn crops. Give them deep rich soil and a sunny position. Earth and stake advancing crops. Those coming into flower should have the point nipped from the top of each shoot, as this will induce them to fill their pods some weeks earlier than they would do if allowed to grow. In dry weather water with liquid manure, and if a special effort has to be made to get the first Peas in as soon as possible give the water heated to 85°.

Celery.—The Celery of 1884 has kept uncommonly well, we have a quantity of it good now. It is not very tender for the pantry, but does capitally for the kitchen, and all who have any left should preserve it for use there. It will be much valued. The ground where it has been growing should be wanted for other crops, but it will do very well if taken up and laid in amongst ashes. Early plants may be planted in the trenches. We have lately put out some scores but not the main crop, as they are only for exhibition at the autumn shows. Lift the plants with good roots, give them plenty of room and water after planting if the weather is not showery.

Endive.—Where this is wanted early in the autumn a pinch of seed should be sown now. The Broad-leaved Batavian is undoubtedly the best of all. A little patch, a yard square or so, if sown broadcast, will produce sufficient plants for a first lot. Do not cover the seed more than half an inch below the surface, and sow rather thinly. As soon as the seedlings can be handled transplant them 10 inches apart in cool rich soil.

Witloof.—This is an excellent winter salad, and should be grown in every garden where there is any demand for salad in winter. It is a Carrot-like rooting plant, with leaves somewhat resembling the Dandelion. It is an improvement on the old Chicory. If sown too soon it is very liable to flower prematurely in the autumn, and this spoils it, but sown now it will hardly do this. The ground for its reception should be free and open, and the seed should be sown in rows 12 inches or 15 inches apart, and about 1 inch below the surface. Two or three rows 8 or 10 yards in length will supply a great many roots for forcing. When 2 inches high they should be thinned to 6 inches apart.

Kidney Beans.—Dwarfs in frames are now fruiting very freely. Give plenty of air on fine days, and close the lights early in the afternoons if it is desired to push on the crop quickly. If there are any frames empty sow more seed of the Ne Plus Ultra variety. They will fruit before any in the open air. Those in the open are through, but they do not grow rapidly at this season; cold nights do not agree with them. As soon as they are a few inches high earth them up, and if it should come very cold or windy put a few twigs along each side of the rows to afford a little protection. A good sowing may now be made in the open. The plants from this will not be up until June, and they will get on all right then. Treat Runners in earthing up and protecting as advised for Dwarfs, and when they are 6 inches high put the stakes to them. Any Runners which have been raised in pots or boxes in frames to come in early for any special purpose may now be planted out. Plant in small groups here and there, stake at once, and put a few Laurel branches around to keep them snug for a time.

Broccoli, Brussels Sprouts, and Savoys.—The seed of those sown in the nursery beds some weeks ago have now produced a fine crop of young plants, and there is danger of their becoming too crowded. Where there is any indication of this draw out the largest of the plants and dibble them in about 3 inches apart in another place. We plant many hundreds of them in this way along the margins of the walks and at the ends of the other crops, and there they remain and do well until they are transferred to their bearing quarters. Where the soil is poor a little leaf soil, Mushroom bed refuse, or something of the kind should be forked into the surface before dibbling in the plants.

Cauliflowers.—All plants ready for planting should be put out at once, the different kinds being kept by themselves. Such a variety as Veitch's Autumn Giant takes much longer to head than Carter's Defiance or some of the very early ones, and as these should be cleared off the ground before the Giant is anything like in or ready for use, it is easily understood the advantage of not mixing them. A handful of lime or soot should be shaken round the stem of every Cauliflower plant before it is earthed up, as they have all a tendency to go off with the worm at the root, and it is best to try and prevent this by some such simple means as we have suggested.

Weeds.—These are now appearing on all sides, and if allowed to go on they will soon seed and give no end of trouble. This should be avoided. Hoe all open spaces frequently, and handweed all thick places amongst close-growing plants and such like. If they can be kept down and mastered now they will give little or no trouble by midsummer or in autumn.

Tomatoes.—The earliest of these may be planted in the open. Give them a bright warm position against a south wall. They should not be blanted closer than 3 feet apart, and one may be put in here and there between trees and to fill up any open space. Each plant should have about a wheelbarrow-load of pure loam to grow in, and no manure or liquid should be given until the crop is formed.

THE FLOWER GARDEN AND PLEASURE GROUND.

Sub-tropical Plants.—These to be effective ought to be of good size when planted out, and no greater mistake can be made in their treatment than keeping the plants starving in small pots. All such sorts as are raised from seed, notably the fine-foliaged Solanum, Acacia lophantha, Ferdinandia eminens, Grevillea robusta, Wigandia caracasana, Castor-oil Plants, Ferula gigantea, Tobacco Plants, Eucalyptus, and Humea elegans

are best potted into 6-inch or still larger pots, and kept growing in a warm house till near the time they are wanted for the flower garden. A mixture of two parts of good loam to one of leaf soil and addition of sharp sand will suit all of them; and after the pots are full of roots an occasional supply of soot water or other liquid manure will not be thrown away on them. Now is a good time to split up the old clumps of Cannas, the divisions being either placed in deep boxes filled with good soil or potted in any sized pots into which the divisions will go comfortably. It is advisable to thus divide Cannas even if it is not necessary to increase the stock, as when strong clumps are planted the growths become crowded, and are not nearly so effective as the divided plants, which are certain to perfect much finer foliage. The same remarks apply to all the Dahlias. Of these one of the most effective probably when mixed with sub-tropical plants is the single Alba or White Queen. Strong old plants of Marguerites, Plumbago capensis, Erythrina crista-galli, Abutilons, Fuchsias, Begonias, Dracaenas, and Caladium esculentum are frequently most effectively bedded out, and none should be thrown away till it is seen if they are wanted.

Hardening off Plants.—The hardiest of the sorts used in the flower beds during the summer ought now to be got outside, both in order to harden them off before being planted, and also to afford room for the boxing-off of the more delicate kinds such as Iresines, Coleuses, and Alternantheras. Where frames are available these are the best for the purpose, as they afford protection from frosts, hail, and rain. Failing these temporary frameworks for supporting mats or other protecting material are necessary, and if these will ward off heavy cold rains so much the better. The change from warm houses and pits to an outside temperature should be gradual, and the delicate sorts must not be heavily watered at first. Early-struck Verbenas, Lobelias, Zonal Pelargoniums, shrubby Calceolarias, Gazania splendens, Golden Pyrethrums, and Cinerarias are among the first to be hardened off. The Calceolarias and Violas may be planted out at once, and the old plants of the latter divided and replanted if need be. Some of the hardiest of the Pelargoniums, Verbenas, &c., may also be planted out where the positions are sheltered, but as a rule nothing is gained by early planting, and it sometimes happens that much time is really lost by it.

Late-struck Plants.—The present is a good time to put in the principal portion of Alternanthera cuttings, and it is not yet too late to strike Iresines, Coleuses, and Verbenas. The simplest plan is to make up slight hotbeds for frames, placing in the latter first some of the shortest heating material so as to bring the cuttings near the glass, on this being levelled about 4 inches of fine light sandy soil. Directly it is found the bed will not become too hot, the cuttings may be dibbled in thinly, or about 4 inches apart each way, and watered in. They should be kept close and shaded from bright sunshine, and will soon strike root. They quickly attain to a good size, and may eventually be transplanted direct to the beds. Such late-struck plants not unfrequently thrive better than do those struck much earlier, and which are often spoiled before they are finally planted out. Much mischief is often done by attempting to harden off the delicate kinds, notably Heliotropes, Iresines, Coleuses, and Alternantheras, much before June, this giving them a check from which they are very slow to recover. Mesembryanthemums, Petunias, Tropæolums, Gaillardias, Scempervivums, Konigas, do not move well out of boxes, and therefore should be potted in pairs or singly, either now, or as soon as the pots now containing Pelargoniums are available. They will, if kept rather warm, root quickly into the fresh soil, and may then be hardened and planted out without receiving any serious check. Shallow boxes and light soil suit the delicate Alternantheras and Iresines, and care must be taken not to keep the soil too wet, especially when they are in cold frames.

Amaranthus melancholicus ruber.—In some gardens where the soil is not cold and heavy this proves a good substitute for Iresine Herbstii, and it is yet early enough to raise a stock of it, as it must not be planted out early. Sow the seed in a pan of fine light soil, cover lightly, and place in warm house or frame. Expose the seedlings to prevent their becoming drawn, and pot off into thumb pots when large enough to handle. Shade from bright sunshine till rooted afresh, keeping them growing in heat till large enough for planting, when they should be hardened off, and be among the last to go out. Perilla nankinensis and P. atro-purpurea laciniatus may also be similarly raised and be in time for bedding out.

Annals in Boxes.—Asters, Stocks, Zinnias, Phloxes, Marigolds, &c., ought not to be kept thickly in the seed pans or boxes, but should be pricked out on slight or nearly spent hotbeds and covered with lights for a few days, or they may be pricked off in boxes and finally planted before they again become crowded.

THE BEE-KEEPER.

EARLY SPRING BREEDING.

AT page 297 your correspondent, "P. H. P.," in answer to a query of mine, asking how he could prevent breeding being carried on in hives from Christmas onwards, says: "We cannot, nor would we try to, stop the natural augmentation of our stocks in the late winter and early spring months. What we spoke against in a former letter was the abnormal condition of many stocks in March, brought about by injudicious stimulation, and entirely by artificial means. Our advice has been to assist Nature." The last sentence is what I have all along taught and tried to

impress bee-keepers with its great importance. I consider his answer, as well as the context, a most unsatisfactory reply. He continues to say that, "Like all other things, the system of stimulative feeding may be abused instead of being carefully used." Now, I hold that stimulative feeding in ninety-nine cases out of the hundred is mischievous and uncalled for, and only betrays bad management previously on the part of the owner. Your correspondent then adds, "We have always written against what to us seems the folly of raising stock to swarming power in March," &c.—an impossibility in most places in the United Kingdom. In the south of England it may be done, which I will advert to hereafter; but no allusion was made to bringing bees to swarming power in March in his article (page 180) which evoked my query, he says: "We have often in this Journal warned those who have bees against beginning to stimulate their queens to breed too early in the year. There is nothing gained by having a lot of brood hatched out in the cold spring weather. Often the effect is the reverse of gain; the sure course of dwindling." March is not mentioned there, nor does he state at what time "the cold spring weather" occurs. The whole sentence is vague and liable to mislead.

I have repeatedly shown that stimulative feeding is a mistake, and ought not to be practised unless with very weak hives or nuclei, and with these only when they are in want. When sugar sold from 8d. to 1s. per lb., stimulative feeding was then resorted to with light hives to tide them over until the fruit blossoms appeared. Since the sugar was reduced in price for the last thirty or forty years the system in well-managed apiaries was abandoned, as it was observed then, and is more and more confirmed every year since, that unfed hives are the most profitable.

If the bee-keeper wishes to be successful with bees let him during the month of September—or better, in August—set aside his stock hives containing young fertile queens with plenty of bees—say, 5 lbs.—with not less than 30 lbs. of honey; better if it should be 40 lbs., as that quantity, as a rule, does away entirely with spring feeding, and observe, with such a hive occupying a dozen frames larger than the standard size, there is no need for contraction. The *British Bee Journal* compares honeycombs to blocks of ice in a hive! but with more experience they and others will find that it is safer to have Nature's food as it was designed, keeping the bees at rest during the treacherous season, than, by confining them to a few combs, keeping them constantly in a state of commotion, causing the queen to exhaust her egg-laying power by depositing more than the bees can hatch, and which are destroyed by them. This is brought about by confining the bees in such an overcrowded state, and which, leaving the heated hive, are killed by the chilling winds. This thins the ranks of the adult bees often to such an extent that the brood perishes; hence the cause of dwindling, which is avoided in such hives as I have advised to be kept. My best hives are those that do not require feeding, and none of them, frame nor Stewarton, are contracted.

When hives require contracting to five or six combs I always consider there has been some fault in the management. Nor do I consider contracting hives having full combs of honey judicious. The space a comb occupies in some hives is about 250 inches, but if the comb is full there is only about 80 or 90 inches of space, all necessary for the health of the bees. A hive over-large is safer, and in many cases is more healthy, than one so contracted as to stifle the bees and make them uncomfortable and excited. With a well-stocked and provisioned hive with a young fertile queen, breeding commences as a rule about Christmas, and continues gradually increasing its brood nest as the year advances, and when March appears I have often found the hive from one-third to half full of brood, and sometimes more. I would not attempt to check this; but if it could be proved that it was necessary to do so I would ventilate from beneath; but with us swarms never come too early. I have mentioned the impossibility of bringing bees to the swarming point in March, unless in the south. I do not know whether your correspondent has experienced such or not; if he has, it would be interesting to hear all about these forward hives, as well as full particulars why supers can be had from frame hives and not from straw ones in Kent or Herefordshire.

It takes a good swarm in a proper-sized hive about six weeks after it has been hived to come to swarming point again. At the expiration of that time, if all has gone well, it is in the highest state of perfection for gathering stores, equal to a non-swarming hive. A newly swarmed hive will, if furnished with comb foundation, the weather and flowers being suitable, make about 1 lb. daily for about eight days for every pound of bees; but after that time until the young bees are hatching it falls off in its gathering daily. Let it be observed that to make the most of bees they should all be swarmed from three to six weeks before the honey glut is expected, which occurs in many places from the middle of June till the middle of July, and then the Heather comes. Therefore, we always aim at having May swarms, and cultivate the system of having young queens in readiness to supply stock as soon as possible after swarming.

In Kent it is said that the honey harvest commences about the end of April and is finished towards end of May. Many years ago Mr. S. Bevan Fox, writing on the Stewarton hive, made a statement that for all the Stewarton hives imported into England he was not aware of a single super obtained from that hive. This prompted a reply from me, and in turn letters from gentlemen supporting Mr. Fox's views appeared, but asking information how to manage bees to get supers from both Stewarton as well as other hives. I replied to these letters, and I am glad, as I was then, to say that I observed a letter from one of the gentlemen recording his success in getting, so far as he knew, the first Stewarton super in England. Then I had still further satisfaction to hear privately from other parties with both kind of hives, straw and wood, that they had been equally successful.

I have a quarter of a century more experience with frame hives than the majority of bee-keepers, who in many cases have not more than from six to ten years. Therefore, I have full knowledge of the superiority of a properly constructed frame hive over straw ones, but it is simply absurd to say that supers cannot be had from straw hives simultaneously, or under the same conditions as frame hives.

I have said that in most places in the United Kingdom it is impossible to bring bees to the swarming point in March by artificial means, because any manipulation during January or February would prove fatal to the bees, particularly so in the first month. It takes three weeks from the time the egg is laid till it is hatched, and as long after hatching before they take a flight, and the same time will elapse before a single bee will take to outdoor labour—I mean during the spring months. In summer the time of evolution is about eighteen days, five days more till they take a flight, and as a rule another three weeks before they work outside.

Where bees are situated in such places as Kent, where the honey season is in April and May, is it not proper that stocks should be nearly at the swarming point during March and April? This can be effected by proper management, but never where stimulative feeding is adhered to, and the still worse practice of spreading the brood and contracting the hive to force bees into supers before the hive is half populated.

The dividing board is my own contrivance, and I have used it for thirty-five years; but I never abused it by cramming the bees on as few combs as possible one week, then foolishly spreading the brood the next. A uniform degree of temperature is desirable at all times, and when the bee-keeper attends to this success is sure to follow. I never intended the dividing board should be used in such a way as recommended by your correspondent. I use it only for weak swarms or nuclei, preferring at all times to have my hives in such a state at the fall that they require no contracting. Such strong hives do not require it, and are always the best; besides, the combs and honey is always better for the bees when it is kept where it should be—inside the hive, and the earlier the district is the greater the necessity to keep such hives as I have alluded to. Hives containing no brood during March, even in our district where the honey flow does not begin till the middle of June, is too late to be profitable; but young bees I never observed were detrimental to the hive, neither can I see where the young bees of a hive more forward than its neighbours are more liable to work mischief than those with fewer young ones.

Cold chilling winds are not injurious to bees in spring. My advice to those who wish to be successful is to keep strong hives in autumn well provisioned, and avoid stimulative feeding and the spreading of brood, both of which are destructive to the bees, and uncalled for during any time of the year, particularly so in spring. If feeding is necessary, give sufficient to meet the requirements of the bees, and they will progress more regularly, and give better satisfaction than by resorting to manipulation which even its advocates have doubts about.—A LANARKSHIRE BEE-KEEPER.

TRADE CATALOGUES RECEIVED.

W. Bull, King's Road, Chelsea.—*Catalogue of New, Beautiful, and Rare Plants (illustrated).*

Charles Frazer, Palace Plain, Norwich.—*Catalogue of Horticultural Buildings (illustrated).*

The Æolus General Ventilating Company, 235, High Holborn, W.C.—*Catalogue of Ventilating Apparatus (illustrated).*



TO CORRESPONDENTS

* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Insects on Peas (*G. W.*).—Instead of the enemy being "almost" dried up, it was dried entirely, until there appeared to be nothing left to examine. Insects and specimens must arrive fresh for purposes of examination.

Water Spreader (*G. B.*).—We must decline the responsibility of advising you on the matter, success depending as much on business aptitude as on the intrinsic merits of an article. You had better exhibit it at some horticultural shows, and if it finds ready favour you can easily have it registered and thus protect yourself for a time, taking further and more costly steps afterwards if you deem it advisable.

Killing Vines (T. S. T.).—After carefully perusing your letter we have arrived at the conclusion that the Vines have been destroyed by the reckless use of linseed oil, petroleum, and black sulphur applied by the jobbing gardener. We have no doubt on this point, and it proves once more the truth of the dictum of a "little learning being a dangerous thing." This is not the first time we have known Vines killed with petroleum and other oil.

Liquid Manure (M. P.).—You have been correctly informed that pouring boiling water on fowl dung, stirring it, allowing it to cool and clear, then using it of the colour of weak tea, is good for Cucumbers, and is certain to invigorate them when there are an abundance of active roots incited by rough top-dressings to absorb the liquid food. It is also good for Chrysanthemums, and what are known as gross-feeding plants generally. It must not be used too strong, nor given to plants just potted or planted, free root-action being an important factor tending to success.

Destroying Slugs (Petit).—The most simple and effectual method with which we are acquainted is to water the beds where the pests are so destructive with lime water; but it must be applied when they are feeding after dark, not when they are hiding in the daytime. A peck of "shells" or lumps of lime will be sufficient for thirty gallons of water, and it should stand to get clear. Slaked or powdered lime is of no use. There are scarcely any plants that will be injured by the lime water; on the contrary, the majority will be benefited by it, especially Box. If a line of moist tar can be spread between the orchard and flowers slugs will not cross it. If you will repeat your question relative to spring-flowering plants, and state whether you require them for growing in pots under glass or for planting in the garden, your letter shall have our attention. The lime water should be applied through a rosed watering pot, and it will destroy all the slugs that are drenched with it.

Manure for Mushrooms (M. P., Brighouse).—You appear to have done all you could under the circumstances, except heaping the manure and combing it down that rain would not pass from it. As it is now saturated we do not advise you to use it for Mushrooms, except you can make a bed in a very cool place after the heap has heated again and been turned for the dissipation of excessive moisture. This is the worst of all seasons for beginners to commence endeavouring to grow Mushrooms. If you refer to page 29 of the third edition of "Mushrooms for the Million" you will find an excellent method described of sheltering manure when collected in small quantities from heavy rains.

Culture of Fadyenia prolifera (W. X.).—This curious little Fern requires the temperature of an ordinary exotic fernery, or the cool end of a moist stove. It succeeds in a compost of peat and sand with abundant drainage, a wide shallow pan being best suited for it, as the long narrow fronds can then extend freely. When the young plants are produced at the point they will soon root in the soil, and may be either separated or allowed to remain, the latter being generally preferred, as they impart a peculiar appearance to the plant. It is usually found advisable to cover the plant with a bellglass to preserve an equable temperature and moisture about it.

Labels (R. C.).—We use labels made of deal, rubbing paint on them, and writing with a black pencil before the paint dries. If the labels are newly made—that is, not dried quite hard, the pressure of the pencil through the paint and into the wood causes the letters to be embedded, and the names are legible for a very long time—even for years, and by securing the labels with small copper wire to stout pieces of galvanised wire in convenient lengths for inserting in the ground, they are practically imperishable. We do not say this is the "best" label, but as a home-made article we find it satisfactory. Metallic and earthenware labels are manufactured for sale and periodically advertised, but it is contrary to our rule to recommend the goods of any particular vendor, and thus imply unjustly that some others are relatively inferior.

Packing Strawberries to Send by Rail (R. N. S.).—We submitted your inquiries on packing fruit to a very experienced gardener, who replies as follows:—"Shallow deal boxes about 1½ inch deep are most suitable, so as to hold a single layer of fruit, and they may be of any size in other respects as the quantity to be sent may determine. Ours for sending from the country to the family in London daily are of half-inch deal, 12 inches long and 11 inches wide, and any number travel safely placed one upon the other and securely tied together with string. We pad the bottom of the box with a layer of Vine or Spinach leaves, gathered a short time so as to become limp, and then place the Strawberries in the box with the stalk downwards, enclosing each fruit in a Strawberry leaf, and placing rather tightly so as to prevent moving about, and keeping the fruit sufficiently low so as to prevent crushing by the lid, which is placed down on a layer of leaves as at the bottom."

Heading Down Large Purple Beech (Nemo).—We fully sympathise with you in your dilemma respecting the Beech tree, which prevents your growing other trees that would be interesting and useful. We should sacrifice the tree so as to permit having the ground laid out in the manner denoted in your plan, which shows taste and judgment, being just what should be sought in a town garden—viz., open space, lawn sufficient for recreation, enlivened with evergreen and flowering shrubs, and interesting at all seasons with flowers in succession. We have had a little experience in heading down Beech trees, but that has not been at all satisfactory. Some of the trees have broken freely enough; but they were young and had a quantity of spray or young twiggy growths, from which fresh emanated freely so as to form a compact head; but when the heads were cut off, leaving little beyond bare branches of considerable age and thickness, we found them push fresh growth very tardily, and in only one instance was a good head formed. We should, however, cut the head in as shown in your sketch, and if you can leave some branches with growth we have no doubt that a new head will be formed in time with a little attention in removing irregularities.

Alteration of Conservatory Lights (M. C. B.).—The best system of ventilation for the side of a conservatory is that of windows with the lights sliding past each other, or the upper part down and the lower part up; but as this is not always convenient on account of the paths not affording ready access, a very good arrangement may be effected by having the lower half hinged and opened by crank-and-lever movement. This system we

should advise in your case, or the windows may be made in casements as shown in the side elevation A, opening in the centre and both outwards with crank-and-lever movement. It is a question, however, for an architect to decide, as the conservatory no doubt forms part of the mansion. It will not answer to place the glass in a groove in the rafters or astragals unless they are bedded on and filled above the glass with putty. An ordinary rebate is better, the glass being bedded in putty, but all the putty above the glass removed, the panes of glass being secured in position with copper tacks. The roof ventilation appears properly contrived.

The Horse Mushroom (A. D.).—Yes, it is early for Mushrooms out of doors, but the specimen you sent is not *Agaricus campestris* but *A. arvensis*, the Horse Mushroom. This is thus described in "Eatable Funguses of Great Britain":—"Nearly allied to the common Mushroom, so nearly indeed that it is scarcely better entitled to rank as a separate species than the varieties *pratensis* and *silvicola* are; but as it is accounted distinct by many authors, and has many qualities of note, it well deserves a separate consideration. The Horse Mushroom has a dome-shaped pileus, bell-shaped in youth, and expanding in maturity, generally of a pure white colour and cottony texture, but losing its downy appearance in age; and a veil consisting of a double membrane, thick, woolly, falling from the edge of the pileus and hanging loosely round the stem; the gills are free, pale pinkish brown, becoming darker as they get older; the stem is cylindrical, the cavity filled with cottony pith. The flesh turns yellow when bruised. Occasionally the pileus is tinged with brown. It attains a large size. Authorities are at variance as to the manner of its growth. Mr. Berkeley describes it as growing in rings, and Mrs. Hussey does not number it among those addicted to circular growth. When it does grow in rings they are of a very large size indeed, and as they are seldom perfect it is easy to overlook the relation which one group bears to another. Fields and woods are the habitats of this Mushroom; those growing in the former are the most wholesome. They should not be taken in the button stage like the *A. campestris*, but are in perfection just as the veil has broken away from the pileus and the bell-shape is merging into the dome. In this stage, and later if free from larvæ, the Mushroom is excellent fried or stewed, and for this purpose is sold in Covent Garden Market. It is one of the best Mushrooms for making ketchup, its large size being a great desideration in this matter."

Vines Unsatisfactory (M. P. D.).—As the Grapes do not finish satisfactorily and frequently shank, the roots are not in a healthy state, the wood not ripening perfectly. The only remedy will be to have the border thoroughly renovated in autumn or as soon as the wood is ripe, the roots being lifted and laid in fresh compost nearer the surface. The drainage, if defective, must be rectified. At present we should cease syringing the Vines, but maintain a good moisture by damping available surfaces in the house other than the Vines in the morning and again at closing time. This, with suitable moisture at the roots, will be sufficient to keep red spider in check. The soil of the border is too wet, although when Vines are inactive growth and their crops swelling it is scarcely possible to give too much water, provided the borders are thoroughly drained and composed of material through which the water can percolate freely. The Vines should be allowed to extend so as to encourage root-action, a deficiency of which is probably the cause of the Grapes shanking. Allow the laterals to extend as far as space admits, but do not overcrowd the principal foliage. We should have a little ventilation constantly, opening both top and bottom lights after the Grapes change colour, so as to cause a circulation of air. Ventilate early and increase with the sun heat to 80° to 85°, closing for the day at 80°, and if the temperature rise to 85° or 90° afterwards it will be beneficial, taking care to ventilate a little again before nightfall, and allow the temperature to fall through the night to 65°, or even 60° on cold nights. If the crop is too heavy remove some of the worst bunches at once. Overcropping is a great evil, and causes many failures.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (R. C.)—*Hedera Rægneriana*.

COVENT GARDEN MARKET.—MAY 13TH.

BUSINESS very quiet. Prices lower all round. Vegetables unaltered.

FRUIT.

	s. d.	s. d.	s. d.	s. d.
Apples ½ sieve	2 6	4 6	Oranges 100	4 0 to 7 0
Chestnuts bushel	16 0	0 0	Peaches per doz.	15 0 21 0
Cobs, Kent .. per 100 lbs.	0 0	0 0	Pears, kitchen .. dozen	1 0 3 0
Currants, Red .. ½ sieve	0 0	0 0	„ dessert .. dozen	0 0 0 0
„ Black .. ½ sieve	0 0	0 0	Pine Apples English .. lb.	3 6 4 0
Figs dozen	4 0	6 0	Plums ½ sieve	0 0 0 0
Grapes lb.	4 0	7 0	Strawberries lb.	2 0 5 0
Lemons case	10 0	15 0	St. Michael Pines ..each	3 0 7 0

VEGETABLES.

	s. d.	s. d.	s. d.	s. d.
Artichokes dozen	2 0	4 0	Lettuce dozen	1 0 to 2 0
Asparagus bundle	2 0	5 0	Mushrooms punnet	0 0 1 4
Beans, Kidney 100	1 0	0 0	Mustard and Cress punnet	0 2 0 0
Beet, Red dozen	1 0	2 0	Onions bunch	0 3 0 6
Broccoli bundle	0 9	1 0	Parsley .. dozen bunches	2 0 3 0
Brussels Sprouts .. ½ sieve	0 0	0 0	Parsnips dozen	1 0 2 0
Cabbage dozen	0 0	1 0	Potatoes cwt.	4 0 5 0
Capsicums 100	1 6	2 0	„ Kidney .. cwt.	4 0 5 0
Carrots bunch	0 3	0 4	Rhubarb bundle	0 4 0 0
Cauliflowers dozen	2 0	3 0	Salsafy bundle	1 0 0 0
Celery bundle	1 6	2 0	Scorzoneria bundle	1 6 0 0
Coleworts dcz. bunches	2 0	4 0	Seakale per basket	1 0 0 0
Cucumbers each	0 3	0 6	Shallots lb.	0 3 0 0
Endive dozen	1 0	2 0	Spinach bushel	2 0 4 0
Herbs bunch	0 2	0 0	Tomatoes lb.	0 0 0 0
Leeks bunch	0 3	0 4	Turnips bunch	0 4 0 0



PROVISION FOR WINTER.

(Continued from page 386.)

TWICE as valuable as common Turnips, decidedly superior to Swedes—Swedes showing 1.5 per cent. of albuminous or nitrogenous compounds, Kohl-rabi, the Turnip-stemmed Cabbage, showing 2.75 per cent., is more hardy, bearing exposure to extreme cold in winter and to drought in summer much better than Swedes. Kohl-rabi is worthy of a high position among crops grown specially as provision for winter; yet its culture can by no means be termed general, it being the exception rather than the rule to meet with a good breadth of it upon a farm, so slow are farmers generally to adopt a new introduction, well tried and of proved merit even as this plant is. It required the soil to be clean, well-tilled, and thoroughly manured; in point of fact, the cultural details recently enumerated for Mangolds answer perfectly for Kohl-rabi. Like Cabbage, it bears transplantation well, and is, therefore, often sown in a seed bed about the third week in March for transplanting in May, a certain saving being effected in the cost of seed when this is done, but we much prefer drilling on ridges prepared as for Mangolds early in May, the Large Green being our favourite sort. When the plants from the drilled seed are large enough for thinning many of them may be used for filling gaps in the early crop of Turnips, or be planted out alone if the weather is showery enough to give the plants a fair start. The bulbs keep well in the store bed or in clamps, and are taken up for storing with the Mangolds. Cattle and sheep are fond of it, and its importance and value will be apparent when it is realised that it yields a crop of a mean weight of 28 tons per acre. We have not tried it for cows, but we may safely do so, for Dr. Voelcker taught us long ago that it was an excellent food for milch cows, producing much and good milk, the butter made of such milk having a pleasant taste, altogether unlike the disagreeable flavour that characterises butter made from the milk of cows fed upon Turnips.

The example of a single season enables us confidently to predict that with home farmers at any rate ensilage will in future play an important part among our store of winter forage; not as taking the place of hay, for as much hay as possible will continue to be made, but as an invaluable auxiliary to the hayrick silos must be brought fully into use. In a very wet summer an extra quantity of silage will probably be made if storage space can be obtained for it; in ordinary seasons coarse herbage, and all grass passed over by cattle or to be had upon headlands and hedges, instead of being mown and thrown in the yards as litter, will be converted into savoury and wholesome food in the silo. So far as our experience goes—and practically we have only to deal with a small silo—we consider it indispensable that the interior of the silo should be faced with Portland cement, that the pressure should be applied at once when the silo is filled and retained till it is empty, only enough of the weights being removed at a time to enable us to cut out the silage in transverse sections. If the whole of the weights are taken off at once, and the silage so left for several weeks, mildew is likely to attack and spread into it with considerable rapidity. Of course, there is the usual amount of ignorant prejudice and stupidity to combat and overcome, but a little tact and firmness soon sets that right so far as having one's orders executed faithfully goes. The master's eye and hand tell in this, as in all other things, better than a mere order to do this or that ever can do, and the satisfactory results which follow the filling of a soundly built silo form an ample reward for a little extra exertion and care.

We might go on and enlarge upon the advantages of the extended culture of forage and root crops for winter store, and our justification for doing so is ample, for never were farmers more straitened in means wherewith to maintain their live stock in a healthy and sufficiently sleek condition than during the winter that is past and the spring that is fast merging into summer. Grass now grows apace; all the crops of the farm look well, and are so thriving that the sight is most pleasant. But let us look forward, and take all care that our aim and purpose is to so link the seasons together that unity of purpose and results may hold good the year round. Well may we inquire if our cropping is correct; if it is quite the best arrangement we could have, or if we might not do better? Proceeding upon the principle that a farm should be self-supporting so far as the growth of all the food for sheep, cattle, and horses goes, we shall then see if our crops are calculated to afford us a full supply of such food, and there need be no question of the disposal of any surplus of what is always a marketable commodity.

WORK ON THE HOME FARM.

Warm showers fell day after day in the last week of April, and the effect upon all vegetation was magical—every crop literally sprang into growth with a rapidity and vigour only to be witnessed in favourable spring weather. Corn, seeds, and grass, all are growing so fast that considerable progress is visible daily. The young plants of Mangolds are visible all along the ridges, and so moist and warm is the soil that we have no fear now of a repetition of the stagnation of growth of last season. Weeds, too, grow apace. Hand and horse hoes must therefore be kept busily at work now to keep them under, and the surface soil well broken and pulverised. Potatoes will also soon be visible along the rows, and then the horse and hand hoes should both be brought into brisk use before the earthing is done with the double-breasted plough. Spring-sown corn is ready for the roller, which must be passed over it at once before the plant gets high enough to sustain injury from it. Hops, too, are growing very fast, much of the growth being already half way up the poles, and the tying with soft rushes will soon be finished. The horse hoe must be passed frequently between the plants to keep down weeds, for the warm nights which are so favourable to Hop growth also bring on the weeds.

Dairy cows now go out daily upon grass, but they still lay in the yards at night. Store cattle have been out upon the calf paddocks for a few days, for the growth of grass was so luxuriant that we did not consider it safe to let in the calves upon it till it was reduced sufficiently to avoid risk of hoove. Calves especially are liable to suffer from it if they are allowed to gorge themselves with young grass; but all cattle are subject to some risk from it, and a watchful eye must be kept upon them. Taken in time hoove can be cured, for it is simply an outcome of the stomach being overladen with a mass of crude food. Gases are generated in such quantities that the stomach becomes distended very much, and prompt measures have to be taken to relieve it. Red water may also be expected to prevail among cattle soon after they are first let out upon the pastures. This, too, must have prompt attention. When severe it is often accompanied by costiveness, and our aim must be to relieve the stomach by repeated doses of Epsom salts, giving a pound of it at first and half-pound doses at intervals of two hours. Ewes and lambs are now being folded upon Italian Rye Grass, which forms excellent succulent and fairly sound food for them. A little dry food is also given to prevent scour, and rock salt is kept in the folds.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	Barometer at 32 nd and Sea Level	9 A.M.				IN THE DAY.				Rain	
		Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1885.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	In.		
May.											
Sunday	3	29.692	50.3	46.5	S.E.	49.9	61.4	37.7	94.2	33.1	—
Monday	4	29.541	49.5	46.6	N.E.	49.2	60.3	44.2	100.8	39.2	0.116
Tuesday	5	29.566	45.4	42.6	E.	49.6	50.7	42.3	80.3	41.8	0.93
Wednesday ..	6	29.368	43.0	44.8	S.W.	49.5	55.2	43.1	89.4	38.7	0.343
Thursday	7	29.658	45.5	40.7	W.	48.2	54.2	39.3	96.1	37.8	0.103
Friday	8	29.942	46.2	41.3	S.W.	47.2	55.3	31.1	102.2	26.9	0.031
Saturday	9	29.958	48.9	43.8	W.	46.8	58.4	36.6	106.6	31.6	0.050
		29.675	47.7	43.8		48.6	56.5	39.2	95.7	35.6	0.741

REMARKS.

- 3rd.—Close oppressive morning, fair afternoon.
 4th.—Generally cloudy, but some sunshine and showers; wet evening.
 5th.—Dull and damp morning, wet afternoon.
 6th.—Wet day, but with glimpses of sun in morning.
 7th.—Fine morning, very wet afternoon.
 8th.—Cold and bright morning, showers in afternoon, fine night.
 9th.—Generally fine and bright, rain in evening.

Temperature much lower, with frost on grass on two nights, that in the early morning of the 8th being rather sharp.—G. J. SYMONS.



COMING EVENTS

21	TH	Crystal Palace Summer Show (two days); Manchester Whitsuntide [Show (seven days)].
22	F	
23	S	WHIT SUNDAY. BANK HOLIDAY.
24	SUN	
25	M	Royal Horticultural Society, Fruit and Floral Committees at 11 A.M.; [Show of Pot Roses and Azaleas.
26	TU	
27	W	

FRUIT TREES IN SPRING.



GREAT deal can be done to benefit fruit trees at the present time both as regards their symmetry, health, and future productiveness; and the work of improvement can be conducted more expeditiously, pleasantly, and effectively now than several weeks or months later in the season. So much attention is given to plants, especially Orchids, at the present juncture—I do not say too much—while the preparation of

various kinds for the flower garden, with advancing vegetable crops, receive, indeed must have, so much attention from cultivators, that there is some danger of the requirements of hardy fruit trees being overlooked. Yet nothing in cultivation is more important. Flowers and vegetable crops are transient in their duration in comparison with fruit trees, that are the most permanent of garden occupants, while they are as serviceable as any, at the same time ornamental, for there is no small measure of beauty in a well-grown and agreeably balanced tree, whether it is trained to a wall or represented as pyramid, bush, or standard.

The first matter to attend to is the prevention of insects. Observe especial stress is to be placed on the word "prevention." It is far more easy to keep insects off trees than to kill them when they are on—far better for the trees and more creditable to the cultivator. Of all the mistakes that are made in gardening that of allowing insects to increase and become curled up in the leaves of fruit trees is the greatest. Insects of most kinds are easy to conquer if attacked in time, but if permitted to marshal their hosts and swarm in myriads they baffle all efforts to rout them without at the same time seriously injuring, if not destroying, their fortifications, and these, it should be remembered, are the precious leaves of trees and plants.

Insects may be successfully combated by systematic applications of pure water. This is Nature's insecticide, and it is the safest and the best; it is also the gardener's best friend if he will only use it at the right time and in the right manner. The right time to apply it to fruit trees is as soon as the fruit is set, if not sooner, and before any insects are visible, or at least very promptly when the first scout of the coming army is perceived. The right manner of applying water to trees is with the aid of a syringe or engine, directing it particularly to the under sides of the leaves with as much force as can safely be applied without injuring them. It would be amusing to watch the gingerly manner in which many young gardeners and older amateurs use the syringe if the results of their playful squirts were not so serious. Syringing as too often conducted is a delusion; the upper surface of the leaves are sprinkled and the workman is satisfied. So also are the insects that are comfortably ensconced below. The under sides of the leaves must be reached directly and forcibly if the operation is to be effectual, and for accomplishing this in the case of trees on walls the stream should strike the wall with great violence between the branches, and the rebound of water will reach the reverse

side of the foliage. When this is done systematically insects may be prevented, but if by any cause they appear, stronger measures must be resorted to for extirpating them.

There are various kinds of insecticides, and so far as I know all are good if rightly used. Nicotine soap, Gishurst compound, Fir tree oil, used in accordance with the instructions of the vendors, will destroy aphides on fruit trees; but in the interests of safety rain water should be used for mixing purposes. Fir tree oil, for instance, mixed with some kinds of spring water, is injurious to the tender foliage of plants and trees; but the same quantity mixed in rain water is perfectly safe. A mixture of softsoap and quassia, 2 ozs. of each, to a gallon of water, is safe and serviceable, and may be used with great advantage once a week before any insects are visible; it is both a deterrent and destructor, and, as before observed, it is much better to deter than to destroy. Tobacco water is a well-proved remedy, the cheapest and best being the London tobacco juice, which is made from duty-free tobacco, in accordance with a special grant, for the destruction of insects; or infested trees may be syringed and well dusted with tobacco powder. It is impossible to attach too much importance to the cleansing of fruit trees in spring, and this can be effected on the lines indicated. If by any chance the leaves at the tips of the shoots of Plum, Cherry, or other trees became so seriously attacked as to curl up over the insects, it is usually the best plan to top the shoots and burn them. If this is done while the shoots are still soft and tender, fresh growths push as freely as from the shoots of a Chrysanthemum, Fuchsia, or any other soft-wooded plant after topping; but if the work is delayed until the wood gets hard it is quite another matter. In this, as in all other operations against insects, promptitude of action is the key of success.

Snails are not infrequently ruinous to young trees by nibbling off the very shoots that are essential for extension in forming a well-balanced specimen. One or two of these nocturnal marauders will do more injury in a night than all the gardeners in an establishment can repair in a season. Let not this simple but serious contingency be overlooked. Half the one-sided wall trees in the country have been malformed at the outset by the attacks of snails; and hundreds of the tender young fruit of Peaches and Apricots are spoiled if the pests are permitted to have their own way at this period of the year. The wise man examines his trees carefully with the aid of a lamp at night, and has recourse to other measures that suggest themselves to him for protecting them from their voracious enemies.

The present is the best time of all the year for regulating the growths of fruit trees, first by thinning to prevent overcrowding—a gigantic evil—and then by pinching, for securing uniformity of growth and the equalisation of strength over the several parts of the tree. In nine cases out of ten the growth of trees, whether trained to walls or as pyramids, is too strong at the top and too weak at the base. The remedy is to suppress the exuberant parts by taking off the tips of the shoots at once. The growths resulting—secondary growths, if we like to call them so—will quite equal in vigour the less strong non-pinched shoots or those nearer the base of the tree. Summer pinching is valuable when properly conducted, but in the majority of cases it is deferred for weeks, if not for months, too long, and then a general slashing is given with a knife or pruning shears. It is in every way better to commence earlier topping those shoots that need it, and those only, with the finger and thumb, repeating the process as may be required as the season advances. This is light, clean, agreeable work, and effective when the head guides the hand accurately.

At this period of the year it is very common to see three or four shoots near the top of a pyramid tree or near the extremities of some of the branches of wall trees as if racing each other for the lead, while the growths below are lagging behind. As only one leader is wanted in each case the

rivals should be checked by the removal of their tips. This will also enable the weaker to advance, and in the end a good finish may be anticipated. Occasionally a terminal growth on one of the side branches of a tree may be so much stronger than its neighbours that a similar check is very salutary; and even a central leader of a young tree, if very strong, may be topped when a foot or more in length, and an additional tier of branches be secured, for the growths issuing from a luxuriant shoot will be quite strong enough for those below them that have not been pinched.

As a rule it is sound practice in pinching the growths of fruit trees to complete the upper parts of the trees first, deferring the lower portions for a week or more, but always acting with discrimination in accordance with the strength of the growths and the ultimate formation of the tree. Any growths of any fruit tree that need shortening with the object of forming spurs may be topped now, leaving about six full leaves. There is no fear of the back buds starting—not half so much danger, indeed, as of their doing so when long shoots are permitted to extend and cut off in July, as the root-action of trees, incited by the very extension of the parts, is then much more powerful than it is now. Strong shoots—make strong roots, and excessive luxuriance can be sensibly averted by early and persistent suppression of the growths.

Young standard fruit trees—Apples for instance—are often sadly neglected. The long straight shoots of hundreds of them are neither shortened at the time of planting nor afterwards. The result of that great error is that a few shoots push from towards the extremities, while the lower portions, to the extent often of 18 inches or more, are practically destitute of growths, and the first crop the trees bear drags down the branches, which never get up again. Such trees are practically spoiled, or at least they are manifestly inferior to others of the same age that have been pruned and the subsequent growths intelligently pinched during the first few years after planting. I would rather shorten the young shoots now with tufts of growth near their tips of trees planted last autumn or this spring than leave them as they are, on the principle of choosing the lesser of two evils. I have recently seen two rather striking examples of ill and well managed fruit trees established four or five years. The former were not shortened after planting, nor have they been pruned since. The branches are long, thin, and “sprawling,” looking as if they would be years before they will bear a ladder against them, much less a man on it; the others have been pruned and the young growths pinched systematically—I may say scientifically. The main branches of these trees are so strong that they would almost or quite bear the owner of them, who is not a “feather-weight,” while the branches right down to the main stem were wreathed with blossom, and, weather permitting, will eventually be clustered with fruit. They are in condition to bear more fruit this year than the untended trees possibly can do, and are immeasurably superior, having regard to their future career and productiveness. They are strong, well formed, and studded with spurs, and will need little further pruning; they have been so well managed that they cannot very well get wrong—managed, I may say, by Dr. Hogg in one of his orchards; but even the doctor could not make the wrongly managed, neglected, unpruned, thin, sprawling examples in contrast with them, right. A good deal more might be said on fruit trees in spring, but someone else must say it, as I have something else to do.—J. WRIGHT.

MR. CHARLES TURNER.

You have not been rightly informed respecting the late Mr. Turner's first start in life. He was not a native of Salisbury, but of Wilton, three miles from Salisbury. He was never employed in the late Mr. Keynes' nursery. Mr. Keynes was not engaged in the nursery trade till some time after Mr. Turner was in possession of the Royal Nurseries at Slough. His first start was with an intimate friend of my early days, the late Mr. Squibb of Salisbury, a very clever

florist and nurseryman. He was the raiser of the Hon. Mrs. Harris Dahlia, which was sent out the same year as Brown's Desdemona; they were both exhibited as seedlings of the year at the first Salisbury Dahlia Show in, I believe, 1834 or 1835. Mr. Turner was, I think, fourteen or fifteen years of age when he came to Mr. Squibb. He was there some years; from there he went to Corne's, at New Cross Nurseries. Mr. Squibb regretted letting him go, and asked me to try to get him to return, leaving to me to offer such inducements as I thought fair to both. I did so, and Mr. Turner came back and remained for I do not now remember how long. Mr. Brown of the Slough Nurseries took a fancy to him, and engaged him to manage his Dahlias and other florist flowers. When Brown retired Mr. Turner started a business at Chalvey. Mr. Cutler Brown took the nurseries at Slough, and carried them on for a number of years. When he retired Mr. Turner took them, and all who have had the pleasure of seeing the Slough establishment must have seen that a master mind ruled it all.—W. DODDS.

CHARLES TURNER gone! The king of florists, the genial and kindly companion, the successful exhibitor, the indefatigable raiser of new treasures for our gardens, the quick and correct judge, we are, alas! to see no more. The news of his death will come as a shock to many who have not seen him of late, but it is no surprise to those who have witnessed the gradual breaking up that surely betokened the end was not far off; but although no surprise, it is as perhaps the greater sorrow, for we have seen that decay which, perhaps, many who admired him have not even heard of.

I think that the title I have given him above as king of florists will be impugned by no one. There are others who in some one particular department of floriculture may have equalled him—none could excel him; but he was so successful in everything that he took up, that it would be futile to place any name on an equality with his, and that as a florist we shall not look on his like again is, I fear, too true.

My first acquaintance with “Charley Turner,” as his friends were wont to call him, was just forty years ago. He was then a young and handsome man, gifted with a splendid tenor voice, but in a very small way of business, living at Chalvey, near Slough, but even then known far and wide by his success in growing Pansies and Pinks. Those were days when what are called florist's flowers had not fallen into the shade around London as they have since done; but Chalvey was too narrow a sphere for his abilities, and on the lapse of the Slough nursery he removed there, and it is with it that his name will be for ever identified. Here his collections of florist's flowers were established in such quarters as florist's flowers never were in before. For many years the celebrated strains of Show Pelargoniums of Mr. Hoyle of Reading and Mr. Foster of Clewer were distributed from here. The collection of Dahlias was only rivalled by that of his old friend, John Keynes of Salisbury. When John Edwards gave up his Auriculas they were transferred to Slough, and Mr. Turner entered on their cultivation with his usual zeal and success, and the Slough collection is still the only nurseryman's in the south of England of any account. When Mr. Groom of Walworth's Tulips were sold, Mr. Turner bought them, loving them for their own sakes, and hoping doubtless to revive a love for them. His Tulip tent was for years a grand sight, but he preached in the wilderness. No taste revived, and at last he gave them up, saying it would pay better to grow Lettuces. When the taste for the Rose so rapidly strengthened, Mr. Turner entered keenly into it. The soil at Slough was suitable, and he soon made his mark as an exhibitor, and held his place. To Slough, too, came most of our successful raisers of novelties. There Mr. Fellowes brought his Dahlias and Picotees; the late Charles Perry, who was one of Mr. Turner's firmest friends, his Verbenas, and Dr. Maclean his Peas. From Slough emanated also some of the best of our garden fruits—Dr. Hogg amongst Strawberries, and Cox's Orange Pippin amongst Apples. Best of All Pea, Schoolmaster Potato, &c., all came from Slough. Mr. Turner was careful as to what he let out, and when he certified that a thing was good there was very little doubt in anyone's mind about it. As to the nursery itself, everyone who has visited it knows that it is the very model of taste, neatness, and order. And one thing, I think, greatly tended to his success. Like the late Lord Beaconsfield, he was a good judge of men, and when he selected those who were to work with him, like him, he placed implicit confidence in them; they remained with him, took as much pride in the nursery as he did, and are many of them there to mourn his loss.

As an exhibitor he was, I think, unequalled. I do not mean to say that there may not have been many who showed as well in the very various departments as he did, but I never me

anyone who staged like him, whether it was a collection of Hyacinths, a bank of Azaleas, or a box of Roses. He had the most consummate taste, and the best eye for colour of any man I ever met. I have seen him when some of his men had arranged, as they thought, a bank of flowers, coming up, casting his eye over them, making a few alterations, and in a few minutes the whole aspect of things was changed. He never, too, fumed and protested over the decision of judges. Being just and clear in his own judgment, he never suspected other people, and when he thought that a wrong decision in which he was concerned had been made, he would probably say so, but there was an end of it; he did not look upon the judges as his enemies, or consider himself the most ill-used of men, a martyr to their ignorance.

As a judge he was one of the quickest, and one would have said, the most impulsive of men. I have often had the pleasure of being associated with him. Quickly he ran his eye over the stands or collections. "That is first, that second, that's third," he would say in his rapid way. We would say, "Not so fast!" and would go through them afterwards with him, and I feel bound to say that in the vast majority of cases he was right.

In former years I used to see more of him than I have done lately. Amongst his warmest friends were the late John Spencer of Bowood, Canon Hole, who had a real love for him, the late John Standish of Bagshot, and as I have said, Charles Perry; but he was friendly with everybody. And now we shall see him no more! His work, good horticultural work, remains; his devoted and excellent wife survives him, and his two sons, Harry and Arthur, have already attained much of their father's popularity, and are widely known and esteemed. Let us hope that in their hands Slough will still be a household word, and the name of Turner long identified with it.—D., Deal.

ORCHID MYSTERIES.

PERHAPS in no members of the vegetable kingdom is the remarkable phenomenon of heteromorphism, or the production of diversely formed flowers upon the same plant, more distinctly exhibited than in the two peculiar and interesting genera of Orchids, *Catasetum* and *Cycnoches*. Observers have from time to time recorded the appearance in some species (chiefly *Catasetums*) of certain strange departures from the typical structure of the floral organs accompanied by the normal flowers of the species and several intermediate forms, all of which were in some instances borne upon the same inflorescence. The first who recorded one of these extraordinary occurrences was Sir R. Schomburgk, who contributed to the Linnean Society a paper describing an Orchid he had found in Demerara, which bore on one spike flowers of what had been supposed to be three distinct genera—viz., *Catasetum*, *Monachanthus*, and *Myanthus*. He further observed that although the *Catasetum* produced seeds freely, the *Monachanthus* was uniformly sterile. This account was published in the Linnean Society's Transactions (vol. xvii.) and attracted the attention of botanists and naturalists generally, but from its singularity was received by many somewhat incredulously. However, in November, 1836, a plant of *Myanthus cristatus* in the garden of the Duke of Devonshire at Chatsworth, also produced flowers of *Monachanthus* and *Catasetum*, similar to the plant described by Sir R. Schomburgk. This specimen was figured in the "Botanical Register," vol. xxiii., and proved beyond all doubt the correctness of what had been previously written concerning the variability of the flowers. Dr. Lindley, in commenting upon the plant, mentions how he first assigned these forms to three genera, distinguishing *Myanthus* from *Catasetum* by the deeply fringed or crested labellum, and *Monachanthus* from both the others, by the absence of cirrhi or feelers from the column, and he further remarks in extenuation of this decision, "Nor do I think that as a botanist I could be blamed for these errors, the genera being founded upon characters which no one could, *a priori*, have suspected could pass into each other in the manner that has now been seen." Many other similar specimens have since been noted, and the two pseudo genera *Monachanthus* and *Myanthus* are now merged in *Catasetum*.

The other heteromorphic genus, *Cycnoches*, is similar in habit to *Catasetum*, its most marked characteristic being the long, slender, and gracefully arched column which suggested the name, *Cycnoches* signifying "swan-neck." Only two forms of flowers have been observed to occur on single plants of this genus, and these are usually borne upon two distinct racemes produced from opposite sides of the stem. In 1836 Dr. Lindley received from a gentleman in Birmingham a specimen of a *Cycnoches* which differed from the species then known, *C. Loddigesii*, in having a column dilated and hooded at the apex, and in being quite devoid of scent. This he considered a distinct

species, and accordingly named it *C. cucullata*, but very shortly afterwards he observed in the garden of the Royal Horticultural Society a plant bearing two racemes, "on one were the fragrant flowers of *C. Loddigesii*, and on the other the scentless flowers of *C. cucullata*."

Well indeed might the same author observe in the "Vegetable Kingdom," "Such cases shake to the foundation our ideas of the stability of genera and species, and prepare the mind for more startling discoveries than could have been otherwise anticipated."

Since that time about six or seven so-called species have been introduced from tropical America, in many of which a similar tendency to produce distinct forms of flowers on the same plant has been noticed, and it is thus extremely difficult to define the specific characters. *Cycnoches Warscewiczii* is one of the more recent introductions, and a specimen exhibited at one of the Royal Horticultural Society's meetings a few years ago showed



Fig. 105.—Large Flower of *Cycnoches Warscewiczii*.

the dimorphic character extremely well. On one side of the plant was a long drooping raceme of numerous small dull yellow flowers, with reflexed sepals and petals, a peculiar fringed labellum supported on a stalk, and a slender arching column. Just above, upon the opposite side of the stem, was a short raceme of perhaps half a dozen flowers, considerably larger in size, of a greenish hue, and broad flat sepals and petals, a short thick column and a somewhat heart-shaped labellum. It appears probable that in this case the large flower (fig. 105), is the seed-bearing form; for the other (fig. 106) although it produces pollinia, seems imperfect in the ovary, and thus the different structures have some bearing upon the phenomenon of fertilisation, an approximation to the monœcious. It is a curious fact that while the three species, *C. ventricosum*, *C. Loddigesii* and *heterochilon*, have flowers similar to the large form of *C. Warscewiczii*—*C. pentadactylon*, *C. aureum*, *C. maculatum*, and *C. Egertonianum* bear flowers resembling the small form with a fringed stalked labellum.



Fig. 106.—Small Flowers of *Cycnoches Warscewiczii*.

Vanda, a *Renanthera Lowii*, is also peculiar in this respect. It produces several slender pendulous racemes 6 or 8 feet long, the majority of the flowers being of a reddish colour, veined with yellow, but near the base of the inflorescence are two flowers quite different in hue, being yellow spotted with crimson. This has probably some bearing upon the fertilisation, but the

respective functions of the two sets of flowers have not, I believe, been determined.—(CASTLE'S "Orchids.")

INARCHING VINES.

THE present is the best of all times to perform this operation. The wood is green and sappy, and a union would take place almost immediately. When inarched early in the season they are far more likely to succeed than when done late. At this time last year we inarched a shoot of Foster's Seedling on to Gros Colman. The union was a good one, and Foster's is now bearing fruit. Two months later we inarched a Black Hamburgh on to a Muscat of Alexandria. They united, and at pruning time seemed fairly firm. In starting the Vines into growth this spring the inarched Black Hamburgh branch pushed forth leaves too, but before its young shoots were many inches in length they began withering and failed. In both of these cases inarching was done in the same way, but there was, as I have said, a difference in the time, and this, with other good reasons, makes me advocate early inarching. Green wood only should be employed in this operation; no matter how thick or how small the shoots may be, they will do. We have inarched those no thicker than a quill, and others as stout as a walking stick, and secured success in both cases, but it is better when the wood of both the stock and scion are about the same in thickness. Black Grapes may be inarched on to white ones, or *vice versa*.

The stock should always be a strong healthy Vine with plenty of roots in good condition. It is not advisable to inarch on to a Vine which is not healthy, shanks its fruit, or is known to be in a poor border and deficient of root-action. The inarching would, no doubt, be a success, even with such a stock, but the after results in securing a satisfactory crop of fruit need never be expected. Poor weakly Vines, or Vines which do not fruit freely, may often be improved by inarching them on to strong neighbours. One may be in a pot, the other planted out, or both may be planted in one vinery. In the latter case the inarching shoots of each should be allowed to grow until they meet, and then unite them. Where one is in a pot bring this to the stock and get them close together. The shoots must be side by side before inarching begins. The shoots should come as close together, then with a sharp knife pare a slice off each and bind the cut parts face to face firmly together with a piece of soft matting or raffia grass. In a fortnight's time undo the tying gently and slack it a little without taking it quite off, just easing it enough to allow of the wood swelling without being obstructed with the binding. This must be looked to now and again. The union will be completed in three weeks at most after the operation, but the binding must be kept on all the season, as any twist might spoil the work. The stock shoot must not be allowed to grow further than the ordinary side shoots on the Vine, but the scion or variety which has been placed on may be induced to grow and make as fine a shoot as possible, as it is this which should be the most desirable variety, and the main object will be to induce it to produce plenty of fruit as soon as possible. Cutting away any part which is not wanted must be deferred until pruning time next winter, and the binding should remain on until then.—A KITCHEN GARDENER.

CHOU DE BURGHELEY.

I HAVE grown this vegetable another year from seed sent by Mr Gilbert, therefore there is no question of spuriousness. It afforded a good dish from the time Cabbages failed in the autumn, and they always do with me after they form hearts and the weather becomes wet; but Chou de Burghley has by the time Cabbage is over heads fit for cutting, and it keeps them right through the winter, and is better than Cabbage in spring; I mean before Cabbage has formed hearts, being of a different and peculiarly delicate flavour. I had it with close heads in late April on a north border, the plants being from seeds sown in May last year.

Its merits, however, are so well known and deservedly appreciated, that I must give as my excuse for alluding to it the prospect of one of the faults attributed to it being likely to be removed. I allude to its tall and spreading growth. In some seed sent me for trial, of something more like a "Savoy than Cabbage," came plants that are very dwarf, all heart, with few leaves, and these kept in good condition until May. The flavour of these was better than Cabbage—a sort of Savoy-Cabbage and Cauliflower flavour combined—which, if it can only be fixed in so compact a plant, cannot fail to take a foremost rank amongst winter vegetables, being valuable to owners of small gardens from its requiring little room and having a long season of usefulness.—G. ABBEY.

THE ORCHIDS AT THE CONFERENCE.

To convey a more accurate idea of the proportion in which the several genera of Orchids were represented at the Conference last week the following list has been prepared, and it will also possess some interest as a record of the species shown at the most extensive exhibition of the kind

ever held. The total number of genera was fifty-six; of species, varieties, and hybrids 347. With only two or three exceptions these were all in flower, and in the opinion of a noted continental orchidist, the whole of Europe, exclusive of Britain, could not have produced such a number in flower at one time. The principal genera were represented by distinct forms as follows—*Odontoglossum*, 66; *Masdevallia*, 48; *Cypripedium*, 40; *Dendrobium*, 34; *Cattleya*, 27; *Oncidium*, 19, and *Lælia*, 11. Taking the number of times they were shown in distinct collections, and exclusive of duplicates in the same collection, these genera stand in the same order with the following numbers—*Odontoglossum*, 174; *Masdevallia*, 91; *Cypripedium*, 84; *Dendrobium*, 67; *Cattleya*, 66; *Oncidium*, 31; *Lælia*, 16. If the number of plants of each variety or species had been counted the *Odontoglossums* would still further predominate. It might be moderately estimated that between 600 and 700 plants were shown.

In the following list the numbers after the names indicate the number of collections in which those forms were shown, in other cases they were only represented in one collection. The varieties follow each species to which they belong.

LIST OF GENERA, SPECIES, AND VARIETIES.

- ACINETA, Humboldtii, 3.
 ADA, aurantiaca, 2.
 AERIDES, Ballantineana, Fieldingi, 3; Houlettianum, 2; quinquevulnerum, Veitchii.
 ANGULOEA, Clowesi, 2; Turnerii, uniflora maculata.
 BOLLEA, Huntleya, Lalindei, Patini.
 BRASSIA, Keiliana.
 BULBOPHYLLUM, Dearei, Lobbi, siamense.
 BURLINGTONIA, fragrans.
 CALANTHE, Dominiana, igneo-oculata gigantea, Sanderiana vestita oculata gigantea, veratrifolia.
 CAMAROTIS, purpurea.
 CYPRIPEDIUM, albo-purpureum, argus, barbatum, 2; var. grandiflorum, biflorum, Bulleni, calurum, 6; caudatum concolor, var. niveum, ciliolare, 6; Dayanum, Druryi, 2; Godefroyæ, 2; grande, 4; grandiflorum, Harrisianum, 3; Haynaldianum, Hookeræ, 3; lævigatum, 4; Lawrencianum, 7, Lowi, 4; marmorophyllum, 4; microchilum, niveum, 4; Parishii, Pearcei, Roezli, Schlimi, 2; Sedeni candidibulum, selligerum, 3; var. majus, 2; Stonei var. platytanum, superciliare, Swanianum, 3; tessellatum porphyreum, villosum, virens, vernixium, Wallisi, Warneri.
 DENDROBIUM, albosanguineum, Bensoniæ, 4; Brymerianum, 2; Cambridgeanum, cariniferum, chrysotoxum 2; clavatum, crassinode, var. album, cruentum, 2; Dalhouseanum, densiflorum, 2; Devonianum, 4; Falconeri, 4; fimbriatum, infundibulum, Jamesianum, 5; Jenkinsi, 2; lituiflorum, 2; macrophyllum, 2; nobile, 3; Parishii, 3; Paxtoni, Pierardi, primulinum, pulchellum, rhodostoma, 2; rhodopterygium, Smilliiæ, superbiens, tetragonum, thysiflorum, 6; var. Walkerianum, Wardianum, 2.
 DENDROCHILUM, filiforme.
 DIACRIUM (Epidendrum) bicornutum.
 DISA, grandiflora, 2.
 EPIDENDRUM, ibaguense, Parkinsonianum, rhizophorum, vitellinum, 3; var. majus, 2.
 ERIA, excavata.
 GALEANDRA, Devoniana.
 GRAMMATOPHYLLUM, one unnamed species.
 HOULLETTIA, odoratissima.
 IONOPSIS, utricularioides.
 CATTLEYA, Bluntii, citrina, 3; dolosa, intermedia, 2; gigas, labiata, Leopoldi, lobata, maxima, Mendeli, 13; var. elegantissima, var. selbornensis, Mossiæ, 13; var. Arnoldiana, var. grandiflora, var. maxima, var. pulcherrima, var. Rothschildiana, var. splendens, nobilior, Percivaliana, Schilleriana, Skinneri, 5; var. alba, 4; Trianae, 2; Wagneriana, Warneri, 5.
 CHYSIS, bractescens, Chelsoni, 2; Limminghi, Sedeni, 2.
 CIRRHOPETALUM, fimbriatum.
 CELIA, Baueriana.
 COELOGYNE, cristata, elata, Lemoniana, ocellata, var. maxima, ochracea, pandurata, Parishii.
 COLAX, jugosus, 2.
 CYMBIDIUM, Devonianum, Lowianum, 4.
 KEIFERSTEINIA, graminea.
 LÆLIA, albida, autumnalis, bella, cinnabarina, elegans, var. elegantissima, var. Schilleriana, lobata, purpurata, 5; var. alba, 2; Schilleriana marginata, Wolstenholmiæ.
 LEPTOTES, bicolor, 3.
 LUDDEMANNIA, Lehmanni.
 LYCASTE, gigantea, plana, Skinneri.
 MASDEVALLIA, amabilis, 3; Armini Backhouseana, Benedictæ, 2; Chelsoni chimæra, 3; civilis Estradæ, Fraseri, Gairiana, Harryana, 9; var. acanthifolia, 2; var. corulescens, 3; var. Dennisoniana, var. lateritia, var. lilacina, var. rosea, var. regalis, var. Russelliana, Houtteana, ignea, 3; var. aurantiaca, var. coccinea, var. Massangeana, var. violacea, Lindeni, 8; var. Mendeli, var. superba ludibunda, ochthodes, psittacina, racemosa, radiosa, Reichenbachiana, 2; Roezli rosea, 2; Schlimi, 3; Shuttleworthi, 7; var. xanthocorys, 2; trichate, tridactylites, triangularis, trochilus, Veitchiana, 7; var. gigantea, var. grandiflora, 2; Wagneriana, xanthina.
 MAXILLARIA, Harrisonæ, luteo-alba, Sanderiana, triangularis Turneri.
 MESOSPINIDIUM, sanguineum.
 ODONTOGLOSSUM, Alexandræ (crispum), 18; var. aureum punctatum, var. Bonnyanum, var. Cooksoni, var. giganteum, var. guttatum, 2; var. roseum, 2; var. Sanderianum, var. Veitchianum, Andersonianum, 5; var. superbum, biconense, Cervantesi, 4; Chestertoni, cirrhosum, 6; citrosium, 4; var. album, 2; var. maculatum, var. Coradinei, cordatum, 2; coronarium minutum, cristatum, Edwardi, 3; elegans superbum, excellens, facetum, gloriosum, 3; Halli, 6; var. magnificentum, var. xanthoglossum, hebraicum, hybridum, hystrix, Jenningsianum, læve, 2; luteo-purpureum, 7; maculatum, 2; var. superbum, mulus, nævium majus, 2; nebulosum, 2; var. pardinum, 2; odoratum, Oerstedti, 2; pardinum, Pescatorei, 2; Phalænopsis, Pollettianum, polyxanthum, 7; prænitens, pulchellum, Rossi, 4; var. majus, 4;

Ruckerianum, 5; var. insigne, sceptrum, 4; Schillerianum, tripudians, 2; triumphans, 6; Uro-Skinneri, 2; vexillarium, 11; var. album, var. splendens, Wilckeanum, 8.

ONCIDIUM, altissimum, ampliatus, 3; aureum, concolor, 4; cucullatum fuscum, insculptum, juncifolium, Krameri, leucochilum, luridum, macranthum, 2; Marshallianum, 5; papilio, pulchellum, 2; sarcodes, serratum, sphacelatum, 2; superbiens.

PANISEA (Cœlogyne), uniflora.

PESCATOREI, Lehmanni.

PHAIUS (Thunia), albus, maculatus, Wallichi.

PHALENOPSIS, Luddemanniana, 3; Parishii, Sanderiana, tetraspis.

POLYSTACHYA, pubescens.

PONTHIEVA, maculata.

RENANTHERA, coccinea.

RESTREPIA, antennifera, 2.

SACCOLABIUM ampullaceum, 3; retusum.

SCUTICARIA, Hadweni.

STELIS, muscifera.

TETRAMICRA (Leptotes), bicolor.

THUNIA, see Phaius.

TRICHOPILIA, coccinea.

UROPEDIUM, Lindeni, 2.

VANDA, cœrulescens, Dennisoniana, 2; suavis, 5; Veitch's variety, tricolor, 2; var. formosa, var. insignis, var. Patersoni, teres.

WARSEWICZELLA, Waillesiana.

ZYGOPETALUM, Sedeni.

The nomenclature was generally very accurate, but in one remarkable case there was a great diversity of opinion. This was *Odontoglossum Alexandræ*, which was shown in about equal numbers under that name and as *O. crispum*, and it seems regrettable that some decision cannot be adopted respecting these. *O. crispum* is admittedly the older name, but Mr. Henry Williams has pointed out to me that Lindley described this species in the "Folia Orchidacea" as possessing [yellow flowers with purple spots "in the centre," which certainly cannot be taken as typical of the forms now so widely known as *O. Alexandræ*. In Mr. Bateman's Monograph of the *Odontoglossums*, the form figured under the latter name is white with a rosy tinge and purple spots on the lip, which is obviously distinct from that Lindley had in view when preparing his description. To meet the difficulty Mr. Henry Williams proposes that the forms with white or rose-tinted sepals and petals spotted with brown or purple should be termed *O. crispum* var. *Alexandræ*, and that all those with yellow-tinted sepals and petals should be termed *O. crispum*. This proposition appears to be a very good one, and would permit retaining a name which has become popular, while giving due precedence to the older title.—LEWIS CASTLE.

HOT-WATER PIPES.

Your correspondent, Mr. W. Bardney, is correct as to there being sufficient room allowed in each joint for expansion. He does not appear to quite understand the reason that joints made with iron borings burst. It is this: Iron borings swell under the process of "rusting" or oxidising, and if there be a slight excess of sal ammoniac mixed with the borings by the smith a renewed process of "rusting" will commence whenever the borings are again damp. This will produce enough expansion to burst any ordinary hot-water pipe joint. Therefore, a joint made of badly mixed borings lasts only as long as the rope caulked into the bottom of the socket prevents the water in the pipe from reaching the borings. Good rope will last many years if well caulked, hence the length of time which elapses before the breakage. Also cold water penetrates the rope much more than hot, and therefore there are more breakages when pipes are at rest. Your correspondent will notice that a large number of sockets crack first at the back, not at the mouth.—FOSTER & PEARSON.

ANTWERP AND ITS EXHIBITIONS.

VERY much that is interesting may be seen in this famous old and new Flemish city (for the ancient and modern are admirably represented) in two or three days at almost any time: but when one of the great horticultural shows for which Belgium is so justly famed is held in a pavilion of the General International Exhibition, which continues till October, I cannot conceive any time or place in Europe more worthy of being commended to the notice of the public generally, and horticulturists particularly, for their spending a few days of cessation from toil, which all should have, agreeably and profitably.

British gardeners almost exclusively, and many amateurs interested in gardening, spend their holidays in their own land in visiting the home surroundings of the affluent where horticulture is so well represented—better, probably, in its way than in any other country; yet, nevertheless, I am convinced that those of the craft who could manage to do so, would find a run over to Belgium during the ensuing summer highly enjoyable, for they would see much to admire that certainly cannot be seen at home. I saw merely the foreshadowing of the greater sights in store and was satisfied, at least for the time, but another horticultural show, with the completed "International," must if possible be visited during the season.

My two days of sight-seeing were mainly spent in the first of the series of shows of the Royal Horticultural and Agricultural

Society of Antwerp; the Great International Exhibition, or "Exposition Universelle d'Anvers," and the highly interesting nursery of Mr. Charles Van Geert at Calmpthout, which is now being enlarged.

THE GENERAL INTERNATIONAL EXHIBITION.

I make no apology whatever for giving prominence to this Exhibition here. It contains an assemblage of the world's products that is, I conceive, quite unequalled anywhere else, and hence is of interest to every class, including horticulturists, with, in fact, something special for them in the permanent exhibition of trees, Conifers, evergreens, Roses, &c., in the grounds, for which medals will be awarded during the season. The Exhibition under notice is, both as regards its magnitude, richness, and variety, far greater than the English public have any idea of. This was the unanimous opinion of the homeward bound passengers on the Harwich steamer. The extent of ground occupied is 220,000 metres, a metre being 1 yard and a fraction over 3 inches, or say 4000 metres = an acre. Roughly speaking, then, there are 50 acres, about half being covered with glass. The building is thus of Crystal Palace-like magnitude, but the roof alone is of glass, the sides wood, yet were being cased to resemble marble. At the chief entrance is a remarkable structure of ironwork, reaching 180 feet high. There are two flanking towers each with an hydraulic lift to a platform or bridge 60 feet above ground, designed for a restaurant, above which the central edifice rises, and is surmounted by a gigantic globe. This framework will doubtless be covered to be in keeping with the remainder of the building, and be embellished by allegorical figures. In its skeleton form it is stupendous when it is considered the building will have served its purpose in a year, and all must then come down. In the towers will be powerful electric lights that will be visible for miles down the Scheldt and the surrounding country.

But what of the contents of the building? It can only be said they are worthy of the nations contributing. The variety is simply bewildering. The extraordinary scope of the display may be indicated by two exhibits of a widely differing character—namely, examples most chaste and delicate of Brussels lace made by the King's daughters, the Princesses Stephanie and Louise, and a coal mine on a scale large enough for working purposes, with two shafts and all the paraphernalia for extracting and raising the mineral. This "mine" will be open to visitors. Almost everything conceivable between those two extremes are to be found in the Exhibition, from a column of Kidney Bean rods, some 30 feet high, to magnificent tapestries from the Senate, with food products of all kinds, textile fabrics in every form, furniture from various countries, works of art, machinery, a cigar trophy on which the great Belgian manufacturer, Trinchant, expended 18,000 francs, and a castellated pile representing the products and trade of Antwerp with tables showing at a glance the increase or decrease in the export and import of every article over a period of several years; in fact, the aggregate display is altogether of an extraordinary character. Most countries has sent their best wares, Belgium being the largest exhibitor, occupying 30,000 metres of space, France 25,000, with Austria, Germany, Russia, Italy, Portugal, following with admirable displays. But England, industrial England, enterprising England, is, in comparison, "nowhere." We see Price's Candle Company, Spratt's Patent, and a few other exhibits, good as far as they go, but the fact remains that we are practically "out of it," and it will be well if this is not a mistake. Has the mind of the country been filled with "Healtheries" and "Inventories?" The former was great in magnitude and interest, and the latter may be still greater when completed; but those who can arrange to visit our Exhibition during the summer, and in the meantime run over to Antwerp, will not be disappointed with either of the magnificent shows, for that "over the water" will bear this great test of comparison.

"Queer matter this for the *Journal of Horticulture*," some readers may possibly soliloquise, "not a bit of gardening in it." I will come to gardening by-and-by; and the change from Orchids and Cabbages will be endured, my object being to intimate to those who may arrange to visit Belgium this year on the occasion of the great plant Show, August 2nd, or the smaller fruit Show, September 17th, that there is something worth going for to Antwerp alone, while Ghent, the seat of horticulture, and beautiful Brussels are within easy reach.

Now for a little "gardening." The grounds of the great Exhibition have been laid out as a pleasure garden by Mr. Fuchs of Brussels, and considering that he had only a flat expanse of stone pavement to work on, it must be conceded he has done his work very well; still there are no particularly striking features to arrest attention. There are large breadths more or less dished

and sown with seeds for lawns, for which prizes will be awarded in due time. A few large trees have been introduced, notably a Purple Beech, 30 to 40 feet high, with a stem 3 to 4 feet in circumference—a very successful example of transplanting. There are also several groups of young trees, large beds of Conifers, evergreens, and Roses, for which medals either have been or will be granted according to the merits of the groups. The Roses number 10,000, but they do not look very promising. There is not the vigour of growth usually seen in this country, and the Belgians do not prune so closely as English rosarians do, and thereby, possibly, err. Prizes are also offered for masses of flowering plants of various kinds, the whole arrangement constituting what is termed a permanent exhibition continuing till October. Some prizes have already been awarded, including the chief medal for not less than fifty Conifers to M. Charles Van Geert of Antwerp, who had no less than 125 varieties planted in a large bed, the selection including the finest sorts in cultivation, represented by specimens as healthy and well furnished as it is possible to imagine Conifers ranging from 3 feet to 8 feet high to be. A corresponding award was made to M. Auguste Van Geert of Ghent for a very excellent group of twenty-five varieties, M. D'Haene receiving a silver medal in the same class. M. De Beucker of Antwerp was honoured for Euonymuses, Ivies, and Aucubas, M. Pynaert also receiving a silver medal for these last-named shrubs. M. Wouters, however, had the chief medal for Ivies, and fine they were, M. Jurissen being the most successful exhibitor of Hollies and Laurels. M. Pynaert had a medal of the first value for a bed of Rhododendron Prince Camille de Rohan, an effective early-flowering variety in great demand for forcing, M. Vuylsteke for a group of Azalea mollis, and M. Van Geert for the effective Golden Box that will be referred to again. The awards are recorded as showing the principle on which the grounds are furnished, which promises to be very satisfactory. And now to the

EXHIBITION OF PLANTS.

This was not regarded as a large show. There were thirty-four classes and sixty-three exhibitors, yet the collections occupied with great effect a building perhaps about 250 feet by 180 feet. Large Palms and foliage plants were elevated round the sides of the structure, Orchids on tables, Roses, Azaleas, Cinerarias, and various other plants being disposed on the floor in gardenesque style, each bed being protected by a light lattice-work border; the general effect was most agreeable, much more so than the formal method that cannot well be avoided in the narrow marquees in which the majority of English shows are held. Belgian horticulturists and floral decorators know how to make the most of the materials at their command. On this occasion there was plenty of good plants and sufficient space for their effective disposal, with room also for inspecting them conveniently, and the large pavilion was formed into a beautiful garden of foliage and flowers.

ORCHIDS.

As intimated last week, there has been a great advance in Orchid culture in Belgium. Rich groups of well-grown plants were staged that are only equalled at the leading English shows. M. Peeters of Brussels was the premier exhibitor, securing the 500 franc gold medal of the Federation of Belgian Horticultural Societies in the class for thirty species and varieties, with plants admirably grown, well flowered, and tastefully arranged. *Cymbidium Lowianum*, with five spikes and about 150 flowers, was the central plant, flanked on each side by excellent *Vandas*, *Lælia purpurata*, with forty flowers, but in three varieties, and *Cattleya Mendelli*, with about the same number of flowers beautifully fresh. Another notable example was *Cypripedium Lawrenceanum*, with seventeen splendid flowers and luxuriant marbled foliage, decidedly excelling in richness and vigour any plants at the London Conference. This bids fair to prove one of the most free and effective of the great family to which it belongs, and Mr. Burbidge deserves a medal for introducing it. The engraving in the Journal last week is a very sober representation of this beautiful "Slipper" as judged by M. Peeter's superior example of culture. *Cypripedium superbiens*, *Oncidium Marshallianum*, *Odontoglossum Pescatorei*, and *Cattleya amethystoglossa* also contributed to the attractiveness of this group, which occupied about 100 square feet of space, a few Maidenhair Ferns being agreeably interspersed. M. Jacob Mackoy was placed second, securing the gold medal of 300 francs, Dr. Boddaert having to be content, or not content, with the medal of 100 francs less in value. It is not often that three gold medals are awarded in one class, but in this case they were well merited. The second-prize plants were wonderfully well flowered and skilfully arranged, but not particularly vigorous. The centre plant was *Vanda suavis Veitchi* flanked with *Cattleyas Mendelli* and *Mossia*

splendens, each with thirty to forty flowers, very fresh and beautiful, while *Dendrobium thyrsitorum*, with twelve racemes, had a commanding effect. This group contained many other good plants, but a few were rather weak. Dr. Boddaerts' group was heavier, but being nearly a hundred yards distant from the others it must have been no easy task to determine their relative merits. It is a pity it was not placed with the others instead of the space being occupied with the *Amaryllises*. A truly magnificent bank of Orchids would then have been produced. The collection under notice contained *Vanda tricolor formosa*, a splendid variety, with three or four other *Vandas*, all good. A magnificent example of *Cattleya Mossia* with ninety-five flowers; *C. Mendelli*, twenty to thirty blooms; a *Cypripedium villosum*, extra fine, twenty to thirty flowers, and *C. Boxalli*, good; *Triopiliis*, *Odontoglossums Rossi majus* and *Masdevallias* finishing the group, a few Ferns being interspersed. It was a massive collection, the plants being fully too large and numerous for the space they occupied. The gold medal was awarded *par acclamation* to the same exhibitor for fifteen *Masdevallias*. The plants were not large, but remarkably healthy, with wonderfully fine flowers. *M. ignea Massangeana* was dwarf, massive, and rich; *M. Veitchi* Prince of Wales variety, very large flowers; *M. cœrulescens*, excellent; *M. Shuttleworthi*, with twenty to thirty flowers; and various others in first-rate condition. Dr. Boddaerts was further awarded a second-prize medal for *Odontoglossums*, the first going to M. Vuylsteke for a smaller but extremely attractive group. It is reported as not unlikely that Dr. Boddaerts will discontinue the cultivation of Orchids before very long, and that his collection will be sold. In the class for fifteen species and varieties the gold medal was awarded *par acclamation* to M. de Cannart d'Hamale, whose plants bore the undeniable stamp of splendid culture. *Vandas tricolor planilubra suavis Veitchi* and *s. Rollisoni* were remarkable for the glossy richness of their foliage and fine spikes of handsome flowers. *Cypripedium caudatum splendens* was effective, a small yet strong plant with three spikes and seven very large flowers. *Cypripedium villosum* was in superb condition with 100 flowers, and *C. Boxalli* with twenty to thirty blooms. *Masdevallias* were sturdy and vigorous, *Lycastes* and *Cattleyas* fresh, and *Calanthe veratrifolia* with a dozen spikes was seen to advantage in the centre of this small but most meritorious collection. A medal was awarded to M. Moens for a small collection of *Cypripediums*, *C. Argus Moensis* being distinct and conspicuous, with others, such as *C. Warneri*, *C. Sallieri* (Maulei type), and *C. superbiens* well represented. A gold medal, value 200 francs, was granted to M. Massange de Louvrex, with the special felicitations of the Jury for a collection of seventy-five *Cattleyas*, remarkable for excellence of culture and great numbers of handsome blooms in superior varieties. A gold medal was also awarded to M.M. Vervet et Cie. for an attractive collection of Orchids with Ferns. It will be perceived that Orchids formed a striking feature of the Show, such an assemblage of them never having been seen in Antwerp.

AZALEA INDICA.

Varieties of these can nowhere else be seen so fine as in Belgium. The newest are there, because it is the land of their birth, and the grandest specimens are there also. There used to be noble pyramids in England exhibited by those great horticulturists Messrs. James Veitch and Charles Turner, but both the plants and their owners are "gone," and there are no specimens in Britain approaching the miniature mountains of beauty of M. Ghellinck de Walle. They are trees with stems ranging from 2 to 4 or 5 feet high as straight, firm, and smooth as spade shafts, with umbrella-shaped heads, as true in contour as if set out with compasses, densely packed with large stout-petalled flowers, resting on thick leathery foliage, but it has to be groped for to be seen. Fancy the central plant, white, and appropriately named *magnificans*, 18 feet round the edge and 8 feet or 9 feet across the rounded head, without a fault; then imagine others round it a little less, of such rich colours as the glowing red of *Auguste Delfosse*, *Roi d'Hollande*, and the *Marquis of Lorne*, the rich rosy pinks deepening to crimson of *Modèle*, *Eugène Mazel*, &c., relieved by the warm salmons of *Madame Ghellinck de Walle* and *M. Verschaffelt*, with the still lighter and beautiful *Marie Van Houtte* and *Bijou de Paris*, and so on to the number of thirty gigantic bouquets, and an idea will be formed of the imposing assemblage, and it will be conceded that the award of the 200 franc gold medal was abundantly merited. So was the smaller "gold" to M. Peeters, who competed splendidly in this class. The central plant or tree in the first-named group is thirty-five years old, and several of the others must have attained their majority, yet they possess all the vigour of youth.

"HOW IS IT DONE?"

That is the question that many will like answering, and here is the reply, By common sense and good culture. Azaleas cannot be grown in poor peat, forced and flowered every year in anything approaching great excellence, so the Belgian cultivator brings his common sense to bear on the matter, and only flowers them once in two years. He further, during their growing year, plants some of them out in a medium composed in a large measure of the magical leaf soil, thus getting vigorous root-action. They are then potted, or rather tubbed, and their vigour is maintained by careful waterings and judicious applications of liquid manure made from cow dung. Roots, and abundance of active fibres as thick as a mat, are first secured, then generous treatment is accorded with biennial rest. That is the "way it is done;" and why cannot something similar be done in England? "No leaf soil!" It is absent in many places, no doubt, but it is not the less a fact that in country districts where old woods abound, there is leaf soil in quantity spread under the noses of persons (beg pardon, under trees) if they did but know it and would scrape it up; but they prefer to use that which has been produced by fermentation in great heaps, though it is poison in comparison with that manufactured by Nature under the sweetening influence of the air.

In the smaller class—twenty plants—the medals went to MM. Vuylsteke and J. Vervaene, the former staging plants with heads 3 feet in diameter, the latter somewhat smaller. A few varieties were noted as very good—namely, Mad. Leonie Van Houtte and Marie Lefebvre, white; Le Superbe, smooth scarlet; Johanna Wintler (Schutz), white flaked with clear scarlet, like the Clipper Carnation; Flambeau, crimson scarlet, floriferous; Brilliantine, bronze crimson, telling; Beauty Supreme, rosy salmon flaked, effective; Antigone (Schutz) semi-double, white, flaked purple; and a charming semi-double white with some such curious name as Sakuntala (Schutz). Viewing this group (Vervaene's) a critical observer, who knows what is what as well as most persons do, remarked, "The Belgians must look out, or this German (Schutz) will run them closely in raising Azaleas," and certainly his productions appear to be very good.

NEW AZALEAS.

Medals were awarded for new varieties to MM. Vervaene, Van Houtte, and D'Haene. The first-named raiser staged among others *Vervaeniana*, semi-double, cream, suffused with salmon, clear dark blotch, massive, free, and very fine; Dominique Vervaene, large single dark scarlet, very glowing; *J. Van Eyk*, orange scarlet, very bright; *L'Ami du Cœur*, soft scarlet, semi-double, smooth, good; Perfection de Gand, rich deep pink, single, very smooth; *Candidissima*, single, very pure and floriferous; *Reine Marie Henriette*, single, white faintly blotched, immense size; and *Arlequin*, flaked and striped like a Fancy Dahlia. From the celebrated establishment of Van Houtte came *Theo. Reimers*, ruby purple, semi-double, free, and good, the best of its colour; *Miss E. Jarrett*, creamy white, single, large crimped flower, good habit; *Comte de Paris*, very large single, half scarlet, half white; *Senateur Vaucamps*, immense deep single rose, a bold splendid variety, surpassing the good one, with the good name of B. S. Williams; *Souvenir de Gordon* (presumably of Khartoum), single scarlet, free, bright, and effective; *Czar Alexander III.*, semi-double, a shade lighter than the preceding; *Mr. G. Schlumberger*, single, ruby crimson, distinct colour, very large; and the very free, pretty, semi-double creamy peach variety *Mrs. J. T. D. Llewelyn*. The best varieties in M. D'Haene's lot were *Baron N. de Rothschild*, purplish ruby, semi-double; *Memoire de Louis Van Houtte*, rich rose, semi-double, crimped, and *Souvenir de Francois Vervaene*, creamy white, with fringed petals. These are the cream of the new Azaleas at the Show under notice.

AZALEA MOLLIS.

Three medals were offered for thirty plants of these—the most floriferous of all hardy Azaleas, and they were awarded respectively to MM. Van Houtte, Pynaert, and Van Meighem. In contrast with the green banks of majestic Palms they had a telling effect. Van Houtte's bushes were monsters, some of them weighing nearly half a ton, and it must have been no joke to transfer them from Ghent. They were, in fact, pleasure ground bushes 5 to 7 feet in diameter, established in large flat hampers, and such specimens would brighten the surroundings of English homes. They were not named, and for a brief selection of varieties the excellent group of M. Pynaert must be "requisitioned." These were newer, hence necessarily smaller and very beautiful. There is considerable similarity in the varieties in this section, but the following are distinct—Louisa Pynaert, clear

soft yellow; M. A. de Cock, bronze yellow; M. Ed. Pynaert, buff pink; M. François Devos, rosy buff; Col. Kutzinski, dark bronze red; Professor Rodigas, straw colour, free; Empereur de Russie, deep rosy orange; and Baron Osy, primrose, free. These Azaleas contributed powerfully to the effect of the Exhibition.

ORNAMENTAL-FOLIAGED PLANTS.

Belgium is justly famed for stately Palms and other plants remarkable for the beauty of their foliage, and Madame Legrelle d'Hanis occupies a high position among Belgian amateurs as the possessor of splendid specimens. By acclamation medals were awarded to her for a group of fifteen species, also for a collection of Rhopals and Aralias, and of these it must suffice to say that every plant was a credit to the cultivator. The same must be said of the Palms of MM. Spae-Vander Meulin, and d'Haene, for which honours were worthily granted. The collection of the first named exhibitor contained what is probably the finest plant in Europe of *Cocos Bonneti*, an elegant specimen, 7 to 8 feet high, with divided leaves resembling those of a Phoenix in miniature, very distinct and elegant. Medals were awarded to M. Auguste Van Geert for handsome specimens of *Chamærops Fortunei*, *Zamia Van Geertii*, and *Phoenix canariensis*, and to M. Pynaert for the last-named Palm, to M. De Smet for *Caladiums* and Palms, to M. Charles Van Geert for stately *Coryphas*, which added greatly to the effect of the Pavilion; and to M. De Beucker (gold) for a collection of fifty varieties of *Funkias*, many of them new, the dark form, *Sieboldiana cœrulescens*, having round leathery leaves, dark green with a sheen of violet. Several of the varieties were not markedly dissimilar, still the collection was highly meritorious, and the plants fresh and well cultivated.

MISCELLANEOUS.

Rhododendrons were effectively arranged and the specimens good, the chief medals going to MM. De Smet and Vuylsteke. Roses, in comparison with the fine group of Messrs. W. Paul and Son at South Kensington last week were inferior, the Belgian plants lacking vigour, and, as a rule, are not pruned, as we think, with adequate severity. M. Van Houtte far excelled with *Imantophyllums*, receiving the gold medal, and the newer varieties are extremely fine, one seedling having a head of twenty-six grand flowers. The prize-medal *Cinerarias* of M. Lawers were very dwarf and good; *Mignonette* from M. Everaerts, vigorous and fine, dwarf bushy plants 18 inches in diameter; the same exhibitor also had very good Strawberries in pots, silver medals being awarded for both collections. The gold medal of honour offered by the City of Antwerp to the exhibitor who contributed most to the splendour of the Show was awarded to M. Peeters of Brussels. This is a sketch of what is regarded as a small show, to which forty jurymen were summoned to adjudicate, including three from England—Dr. Masters, Mr. Bull, and Mr. Wright, but only one of them could attend. The great Show of August 2nd is the one that British gardeners should visit, and what with one exhibition and another they will find enough to satisfy them.

Besides the Great General Exhibition first referred to there is an International Show of the pictures of living artists contiguous. It is very extensive and rich, England being represented by some valuable works. John Chinaman, too, has an exhibition of his own. It came about in this way. On John ascertaining the cost of space for his products in the great building, he calculated that with the addition of a few hundreds of francs he could purchase all the land he wanted just outside, abundantly recompense himself by the "takings" during the season and have the land into the bargain, the general opinion in Antwerp now being that "the Chinese are wide-awake people."

HOW TO GET THERE.

If gardeners and others desire to know how to get to the congeries of exhibitions, I can inform them that the Harwich steamers run alongside within five minutes' walk of them all, and as there is now direct communication from the midlands and the north by the joint line of the Great Eastern and Great Northern Railways there is no transit difficulty, and the cost, which can be ascertained, is not serious. The steamers are fine sea "boats," most comfortably appointed, every berth in the "Ipswich" having an electric light, under control, while everything that is needful can be procured out at least as cheap as in hotels; and visitors leaving Antwerp had better not waste time in dining on shore, as they can get a dinner afloat at six o'clock in every respect excellent, and no reasonable man can grumble at the price. As this is the kind of information that would once have been useful to me, I impart it to others, to some of whom it may possibly be serviceable before the season is over. In a future

issue I will endeavour to say something about M. Van Geert's interesting nursery.—J. W.

TRENCHING LAND.

YOUR correspondent, Mr. Iggulden, has written much on the disadvantages of trenching. In fact, from what he says, we must come to the conclusion that trenching or deep digging is time and labour lost. In the Journal of the 14th inst. he says that at Richmond, Feltham, and Bedford trenching is now adopted by the market gardeners, but Mr. Iggulden further adds that the soil is light with a gravelly subsoil. May I ask, Who would trench such a soil? What would be the necessity? Nature has rendered it unnecessary; the only help Nature requires is plenty of manure. Now I must say that an experience of forty years leads me to differ from Mr. Iggulden. I have always found the best crops of all kinds to follow trenching when the ground is strong and has not a gravelly bottom. At this moment I am looking out at a field which has been long in grass; a deep drain had been cut in this field, not because it wanted draining, but for other reasons. The clay was put back again and the sods replaced. The result is that the produce immediately over the drain is nearly three times as great as on the other parts of the field. Again, I trenched for Strawberries and planted Lettuces between last year; the very best results followed. I fear the recommendations of Mr. Iggulden may induce lazy gardeners to follow a practice that will disappoint many employers, where the ground is not of a light character and the subsoil gravel.—E. D. O.

BROCCOLI FOR SUCCESSION.

THESE have been fine and plentiful. It is rather perplexing to know which sorts to grow when there are so many, and yet I find it necessary to grow a number in order to have a succession from December to June. During the past winter those that have done best with me, and which is only a verification of former years' experience, were the following. Snow's Winter White gave heads in December and February, when Veitch's Self-protecting Autumn came in, and very acceptable it was; in fact, more useful than had it come in in December—its usual time—onwards, but I am at a loss to account for its being so late. Veitch's Spring White succeeded along with Cooling's Matchless; then came Leamington with Lauder's Goschen in April, with Ledsham's Latest of All at the end of the month and early May, which is the latest I have had it, and I have grown it every year since it was sent out. It is now (May 15th) about over even on a north border, and is variable. But what I particularly wish to note is the great merit of Veitch's Model. It is very dwarf, very compact, close-growing, and very hardy. I have not known a plant injured by frost, and the heads are so well protected that they can hardly be nipped by the May frosts. I have cut it as late as June 7th, and this year there is promise of its being even later, as I only cut the first on May 13th, and some of the plants are scarcely moving. The heads are very close, solid, medium-sized, very heavy, beautifully white, and delicate in flavour. It reminds us of the good old Invisible White and Wilcove's Late White, but is very much bardier and shorter, and is so compact that whilst others require 30 or 36 inches distance it only needs 24 inches every way. It is a first-class vegetable and richly merits a certificate.—G. ABBEY.

ORCHIDS AT UPPER HOLLOWAY.

NUMBERS of horticulturists who journeyed to London to attend the Orchid Conference at South Kensington included in their programme a visit to Mr. B. S. Williams' celebrated nursery at Upper Holloway, where an exhibition of choice valuable and beautiful Orchids had been provided. Those who are familiar with that collection and its attractions were, however, agreeably surprised to find that with a view to the production of a better general effect a portion of the staging in the large Palm house had been cleared of its usual occupants, and the space filled with Orchids, an improvement of great importance as regards the display. The house is 100 feet long, with a spacious path and a stage on each side, two handsome banks of flowers being thus formed, the appearance of which was still further improved by the employment of small Palms, Ferns, and a margin of *Isolepis* gracefully fringing the edge of the stage with its bright green leaves. At intervals some are suspended from the roof of the house, and the pendulous racemes of these mingle with the erect-growing Orchids most gracefully. In the centre bed large specimens of *Anthurium Schertzerianum* impart a peculiar richness to the effect owing to the number and high colour of their spathes, while the larger Palms and Tree Ferns in the background form a suitable framework to a very pretty picture. Near the entrance an uncommon but elegant and natural mode of employing Orchids for decorative purposes is very noticeable. An old stem of a Tree Fern has had several branches and stumps of various trees secured to it, so they rise at differing angles and to different heights. The points of these, and several suitable places upon them between the apex and the main stem, are clothed with moss, and upon this is secured such Orchids as *Oncidium concolor*, *Epidendrum vitellinum*, *Odontoglossum Marshallianum*, *O. Alexandræ*, and many others, all free-flowering species, and as the main stem is similarly clothed the result is very satisfactory. It is also very suggestive, and has a much less formal appearance than the ordinary way of arranging plants in pots on shelves; anything that will break the prevalent monotony in plant houses is welcome, and some modification of this might be advantageously adopted in many establishments.

Upon the side stage large numbers of species are represented, many very rare and valuable, but the *Lælias* with the *Cattleyas* give a remarkable wealth of colour. *Lælia purpurea* is in fine condition, but the extensive stock of this useful Orchid is not yet at its best, and in the other houses hundreds of stout sheaths are showing, which greatly enrich the display for weeks to come. The fidelity with which the plates in the Orchid Album are executed is well known, but there were a few doubters when the plate of *Lælia purpurata* Williams appeared; if any of these still continue in the same opinion they should at once visit Holloway and see a plant of this magnificent variety now flowering, and they will doubt no longer. It is unquestionably one of the grandest Orchids we have, its large lip being of the richest deepest crimson, most exquisitely and regularly veined in the throat, and with broad delicately veined petals. It is vastly superior to the ordinary *Lælia purpurata*, and deserves a prominent position amongst our best *Cattleyas*. Another choice form of the same species is that known as Lord Londesborough's variety, which is readily distinguished by its pure white petals being flat instead of being twisted or curled like the others are, and this gives the flower a peculiarly bold appearance. A new *Lælia*, which Mr. Williams proposes to call *L. Measuresianum*, attracts notice by its neat and pretty flowers. It was received with an importation of *Lælia elegans*, but is easily recognised as having the lip even, not cut at the sides as in that species, and it is also beautifully frilled, bright crimson, and yellow in the centre; the sepals and petals being white and undulated on the margins. It will unquestionably become a favourite when its portrait appears in the Orchid Album, as is promised. *Cattleya Mendeli* and *C. Mossiæ* in variety are represented by numerous plants; of the latter a variety named *Marianæ* is particularly noteworthy, the sepals and petals pure white, with a crimson lip and yellow throat. This is a valuable Orchid, and is considered one of the best of the *Mossiæ* type. The bright *Cattleya Skinneri*, and the charming *C. gigas*, with the fragrant yellow *C. citrina* and *C. intermedia*, add their attractions to the display.

Oncidiums of the *ampliatum*, *Marshallianum*, and *concolor* types furnish abundant spikes of bright yellow flowers, the last named being especially well represented. The yellow and brown *O. Gardnerianum* with the curious little *O. dasystyle* and its insect-like flowers are also noteworthy. *Dendrobium thysiflorum* and *D. densiflorum* are flowering freely, their long racemes of white and golden blooms being most pleasing. *Cypripediums* of many species are there, the stately *C. ciliolare* attracting much admiration. All the best of the *Odontoglossums* are beautifully shown. *O. Alexandræ giganteum* has enormous flowers $4\frac{1}{2}$ inches in diameter. *O. citrosimum roseum* has a bright rosy lip, contrasting with white sepals and petals, and the plants suspended from the roof of a house have a graceful effect. *O. triumphans* with rich brown and yellow flowers is very handsome, while that grand variety *O. vexillarium splendens* is remarkable for its depth of colour. *Vandas*, *Aerides*, *Masdevallias*, *Epidendrum vitellinum majus* and scores of others could be named, but the mention of two fine specimens must conclude these notes for the present. *Dendrobium calceolus* (*moschatum cupreum*), a magnificent plant, bearing twenty-six spikes of eight to ten flowers each, a wonderful specimen, not quite at its best yet, but which unfortunately does not last long. *Aerides Fieldingi* is the other plant alluded to, and this has six spikes 2 to 3 feet long and two of them branched. It is a handsome specimen, and very rarely is such a one seen, but curiously enough it appears that the floriferousness this year is due in some measure to the fact that the plant lost its leading shoot some time since, and the check thus given is believed to have resulted in the present fine condition.

Extensive as is the display provided in the Palm house, all the other houses possess some attractive features, and whether the visitor be specially interested in Orchids, Ferns, Pitcher Plants, *Ericas*, *Rhododendrons*, or miscellaneous stove plants, he will find abundance to please his particular taste.

GREENHOUSE RHODODENDRONS.

THESE plants should not be allowed to stand upon shelves or stages upon which no gravel or moisture-holding material is employed, for they make a stronger and more luxuriant growth when the atmosphere about them can be kept moderately moist. Large plants will do well subjected to the same treatment as *Camellias*, while smaller ones may be accommodated in a cold frame, the plants standing upon ashes. The frame should be kept close and moist, the plants being shaded from bright sunshine. Employ the syringe freely both morning and afternoon. These plants do not require large pots, and such soon prove injurious, but plants that have filled their pots with roots must be repotted directly their roots are active. Small shifts only should be given, draining the pots liberally, and the soil consisting of fibry peat and sand must be pressed firmly into the pots. Supply water carefully after the potting, but plants established in pots with a good number of roots must not be allowed to suffer by an insufficient supply, or their fine silk-like roots will soon perish.—N. G. L.

BONEMEAL FOR PLANTS IN POTS.

MANY plants need almost daily attention for some months before they are placed in the pots in which they are to flower. It is a very common practice to add a quantity of bonemeal to the compost that is to be used. This being the case, it is wise to consider at the commencement of the season whether this ingredient benefits the plant. Some time ago I was led to think seriously about this matter, and thus give my opinion, at the same time solicit the views and opinions of others. Three years ago I conducted a few experiments with two artificial manures and bonemeal on a lawn that had been previously lifted to level the ground. Each was

applied on the same day on a separate portion of the lawn during the month of March, and the two artificial manures had decidedly the best of the bones for the first season. The bonemeal did not improve the appearance of the grass in the least, while that treated with artificial manures displayed a marked improvement. The bonemeal produced more effect the second season than the artificial manures had the first, but the latter were evidently exhausted the first season. The third season, again, told in favour of the bonemeal, and what will be the case this year remains to be seen. Similar experiments were tried with Peas, Onions, Lettuces, Cauliflowers, and other vegetables, which resulted in favour of the two artificial manures, the bones evidently making no difference.

These observations and experiments prove that bones, however fine they may be ground, do not act in any marked degree during the first season, but prove an invaluable lasting manure. If this is the case, and bones do not impart their stimulating influence to the plant during the first season, its use in the compost for many plants is waste so far. I do not wish to infer that the properties of the bones will be destroyed by being mixed with the compost and not utilised by the plant; on the contrary, the soil after the plant has done its duty is the richer by the addition of the bones, and therefore more valuable for using for other purposes. If no benefits arise from its use for pot plants that have to be grown quickly for the supply of flowers and for the decoration, we had better abandon its use and apply artificial manures that act quickly to the surface when the plants require extra food and assistance. On the other hand, I consider it an invaluable manure for plants that are retained in pots for some years, or are potted and retained for at least two years in the compost in which bonemeal has formed a part. Up to the present time I have used bonemeal very freely for plants in pots, and frequently recommended it to be used, having had such faith in its lasting properties for supplying plants with food long after they had exhausted the supply contained in the other ingredients of which the compost was formed. From the experiments enumerated and others conducted with plants in pots, I have serious doubts whether the plants can draw food from the bones used until a certain time has elapsed, when other sources at their command have failed. What say others?—SCIENTIA.

EARLY PEACHES.

WHEN looking through Messrs. Rivers' nursery at Sawbridgeworth on May 12th, I was very pleased to see a beautiful lot of early Peaches in pots. Early Alexander was within three days of ripening, Early Waterloo was a few days behind it, and Hales' Early was later still; then followed Early Beatrice and Early Rivers, nearly together, and next came Early Louise, Rivers' Early York, &c. The last two appeared to be quite a fortnight later than Early Alexander; the latter is also a good-sized variety, and colours well. All were started on January 1st at about 40° as a minimum temperature, it being the practice here to start very steady and to finish off in a high temperature. The first three are American varieties, and are found to be very impatient of forcing two years in succession. This nursery is now well worth a visit from anyone interested in indoor fruit culture.—W. H. DIVERS, *Ketton Hall*.



AT a general meeting of the ROYAL HORTICULTURAL SOCIETY held May 12th, Sir Trevor Lawrence, Bart., M.P., President, in the chair, the following Fellows were unanimously elected:—E. H. Adcock, A. Andrews, W. Bagley, F. R. Barry, J. O. Beales, Major-General Beynon, R. H. Blockey, C. Bonsall, A. Borwick, W. E. Brymer, J. W. Budd, F. M. Burton, G. Butt, T. E. Byfield, W. Clowes, W. Cobb, R. Dean, S. de Lissa, T. L. Devitt, W. M. Farmer, Capt. C. Farquharson, T. Fisher, Mrs. Francis, Mrs. Gideon, Mrs. Godson, J. Gordon, Mrs. Gregory, R. S. Guinness, J. Gwynne, Mrs. F. Hartshorne, C. S. B. Hilton, Mrs. Hilton, Mrs. Howarth, W. T. Kingsbury, Mrs. E. S. Knipe, G. Lawrence, O. Leeson, W. Looker, G. F. Morris, J. S. Moss, Field-Marshal Lord Napier of Magdala, Lady Napier of Magdala, G. C. Norman, C. C. Paine, J. Parker, A. Pears, Mrs. Pears, Miss Pears, R. C. Powell, W. H. Pastheroe, Mrs. Robinson, Mrs. S. Rose, C. J. Shubrick, G. H. Smith, Mrs. E. M. Smith, H. G. Smyth, Miss Towers, W. H. Townsend, W. Trotter, J. Vallance, Wm. Wadham, P. J. Worsley, Mrs. T. Wright, C. C. Wrigley.

— WE regret to record the death of the well-known and respected nurseryman MR. EDWIN COOLING of Mile-Ash, Derby, which took place on May 12th, 1885, at the age of 77 years. In the midlands Mr. Cooling long held a prominent position as one of the leading horticulturists.

— THE site chosen for the AMERICAN EXHIBITION to be held in LONDON in 1886 is Earl's Court, a short distance from South Kensington.

The property to be occupied by the Exhibition covers about twenty acres. The station for the District Railway will be in the Exhibition grounds, and another one will be at West Brompton, a few steps from the entrance to the main building.

— THE RAMSBOTTOM FLORAL AND HORTICULTURAL SOCIETY is making steady progress. Last year about £25 was offered in prizes. This year they offer over £30. The receipts last year amounted to £58 13s. 9d., which gave a balance in hand of £19 16s. 6d. The Show this year will be held on November 14th.

— A DISPUTE between a Mr. Godfrey and Messrs. Waite, Nash and Co. respecting the supply of LILY OF THE VALLEY ROOTS was recently before the Exeter County Court. The action was brought by plaintiff, a florist of Exmouth, against the defendant, the complaint being that whereas plaintiff ordered of Messrs. Waite, Nash & Co., Berlin Lily of the Valley roots, they sent Dutch roots instead. The case was originally launched as a breach of contract, and there was never a suggestion that what had taken place was of a fraudulent character. It was, however, proved conclusively by documents that the roots were what they were described as being in defendant's invoices—viz., German Lily of the Valley roots, and the case was accordingly settled without requiring a decision of the Court. Plaintiff's object was to get an early crop, and disappointment in that particular induced him to believe they were Dutch. Mr. Sparkes (speaking on behalf of the defendants) said that had the case been tried their answer would have been twofold. In the first place they would have repudiated any legal liability in the matter; but the broad moral answer was that the order sent in by plaintiff for German roots had been faithfully, honestly, and truly executed.

— THE annual report, schedules, and list of members of the NATIONAL ROSE SOCIETY is just to hand, and from it we learn that after the three shows last season a balance of £17 8s. remains to the Society's credit. The dates of the exhibitions for the present year have previously been given, but we may repeat them now as reminders to rosarian readers—namely, South Kensington, Tuesday, July 7th; and Manchester Botanic Gardens, Saturday, July 11th.

— THE usual monthly dinner and conversazione of the HORTICULTURAL CLUB took place on Tuesday evening, the 12th inst., when there was a good attendance of members, including Mr. John Lee, chairman; Messrs. Cousens, Girdlestone, Wheelstone, Stothloff, Druery, &c. In the evening an interesting discussion took place on Ferns, the subject being opened by Mr. C. T. Druery, who very clearly, with the aid of diagrams, showed the difference of reproduction in the case of flowering and cryptogamic plants, both in their normal and abnormal aspects, alluding in the latter to his own recent discovery of apospory, which has already been alluded to in these columns. Mr. Cousens dwelt on the possibility of hybridising Ferns, notwithstanding the minute character of the organs of reproduction, and during the discussion which followed many interesting facts were brought forward, such as the occurrence of abnormal forms of varieties of British Ferns where only one plant has been found. It was announced that the subject for the meeting in June would be Alpine Plants.

— THE LEEDS FLOWER SHOW will be held in the Horticultural Gardens of that town on June 24th, 25th, and 26th of the present year. Very liberal prizes are offered in a number of classes for plants, flowers, and fruits, but it is provided that if "there be deficiency of receipts as against expenditure, the Committee will make a reduction from the prize money *pro rata*; and, on the other hand, should there be a surplus after paying all expenses, that surplus will be divided, *pro rata*, amongst the exhibitors." This announcement has been made in consequence of heavy rain falling on the Show days of previous years, and preventing the attendance of visitors.

— A MEETING OF THE WAKEFIELD PAXTON SOCIETY was held last Saturday evening, when the following officers were appointed as the first officers for the Yorkshire Association of Horticultural Societies, in pursuance of the wish of the meeting of delegates held at Wakefield on the 21st ult. President, T. Senior, Esq.; Vice-president, Messrs. H. Oxley and T. Garnett; Treasurer, Mr. Alan Willis; Secretaries, Messrs. H. Chapman and J. Whitworth. The Committee will consist of two representatives from each Society in the Association, and the two appointed from this Society are Messrs. W. Hudson and W. Holmes.

— OWING to the extreme pressure on our space last week we were

unable to refer to the beautiful MISCELLANEOUS GROUPS OF PLANTS EXHIBITED AT THE ORCHID CONFERENCE. Messrs. Wm. Paul & Son, Waltham Cross, staged a very handsome group of pot and cut Roses, for which a silver-gilt Banksian medal was awarded. Messrs. Barr & Son exhibited a portion of their well-known magnificent collection of Daffodils, which were, as usual, judiciously arranged, and attracted considerable attention; a silver Banksian was awarded. A bronze medal was adjudged to M. Louis Van Houtte, Ghent, Belgium, for a group of Azaleas; and also to Mr. Rumsey, Joynings Nurseries, Waltham Cross, for several boxes of cut Roses. Mr. T. S. Ware, Hale Farm Nurseries, Tottenham, was adjudged a bronze Flora medal for a group of Pæonies and hardy plants, which was deservedly admired. Messrs. Paul & Son, The Old Nurseries, Cheshunt, received a similar award for a charming collection of rock plants, including several varieties of Phlox setacea, of Saxifrages, Polemonium reptans, Cheiranthus alpinus, Trollius asiaticus, Viola pedata, and many other hardy plants. Messrs. James Veitch & Sons were represented by a small collection of plants, and Messrs. Kelway & Son, Langport, by boxes of cut Amaryllis blooms.

— THE WEATHER.—During the past week north-easterly winds have been prevalent accompanied by low temperatures, which injured vegetation in many districts of England. Upon the Continent the weather has been much more severe. A Vienna telegram to the *Daily News* says:—One of the most terrible storms ever witnessed in Vienna raged on Friday night, and destroyed shrubs, trees, and even houses. The cold was so piercing that six persons who had been thrown down in solitary parts of the outskirts were frozen to death before the morning. From all parts of Austria and Hungary news has been received that the snow covers vineyards and fields where the crops were in an advanced condition. One single night has caused immeasurable damage everywhere. The extraordinary fall of temperature has been followed by heavy snowstorms in several districts of France. In the Vosges the mountains are covered with snow. At Chambéry there is constant rain with hail, and all the villages are under snow. The corn crops have suffered greatly, and also the Vines. In the Canton of Ruffieux, not far from Aix-les-Bains, the hail has completely stripped the Vines of their young buds. In Haute Savoy the weather is equally bad, and in the environs of Annécly snow is reported at very low altitudes.

AUTUMN STRAWBERRIES.

A DISH of Strawberries is always acceptable, and now that we have varieties that may be said to be almost perpetual fruiters no difficulty need be experienced in prolonging the Strawberry season. Some sorts, notably Princess Frederick William, and in a lesser degree Vicomtesse Hericart de Thury, will frequently produce a second crop from plants that have previously fruited in the open ground. More dependance, however, can be placed upon the forced plants, as if a few of these are planted out they will be certain to produce a crop of fruit in the autumn. The earliest forced plants of almost any sort of Strawberry will as a rule fruit again in the autumn; but the two above-mentioned sorts are now, I believe, almost exclusively relied upon. They should be assigned a sunny position and good free-working soil, as they do not quickly strike root into stiff newly worked ground. Those who grow a few plants only and do not force them early may yet, if they are the right sort, fruit them a second time in the open. No time need be spent or room occupied in hardening them off, all that is necessary being to lightly protect them after they are planted and when the nights are frosty with branches of evergreens. Every plant should be thoroughly moist at the roots when turned out of the pots, as if planted in a dry state it is almost impossible to moisten them again, and a partial failure will be the consequence. They do not require much room, especially if only a single row is planted, but each plant should be just clear of its neighbours. The ground about them should be rammed down firmly, care being taken that the upper portion of the balls do not protrude. If the ground is at all dry a good watering must be given, and in any case it is advisable to mulch heavily with strawy manure. Later on they should be examined occasionally, and given a soaking of water or liquid manure whenever they appear to require it.

Towards the autumn, or when the fruit is commencing to ripen, it is advisable to raise the clusters clear off the ground, both for the purpose of preserving them from slugs and also in order that the fruit may have the full benefit of the sunshine. Wire crinolines of any kind are suitable, but light stakes and rings of string or matting will answer equally well. It sometimes happens that the crops are produced too late in the season

to ripen properly in the open, and in this case where there is plenty of house room the best of the plants may be lifted and placed into sizes of pots rather larger than those in which they were first grown. Some growers prepare them especially for lifting and fruiting under glass, and the plan of plunging the pots rather below the level of the ground, so as to induce the roots to spread into the surrounding soil, is a good one. In this case they are usually disposed in a sunny border conveniently near the water supply, as they naturally require frequent waterings. When they are lifted, this being usually done late in September, much of the soil, as well as the principal portion of roots that are attached to the pots are removed, and their loss does not appear to injuriously affect the crop. Each pot is stood in a saucer and kept well supplied with water and liquid manure. The crops ripen best on the sunny shelves of the freely ventilated Peach houses, but we have also succeeded with them in other houses, pits, and frames.

Some of the best crops of late fruit I have yet seen were produced by plants growing in 6-inch pots and treated as just described. The clusters of fruit were neatly staked, and when placed on the dining table made one of the most pleasing decorations imaginable. Birds are perhaps more destructive to late Strawberries than slugs, and nets must be placed over the rows directly the fruit commence to colour. I am well aware all cannot grow late Strawberries, owing to scarcity of garden room or other causes, but many more might cultivate a few, if only fifty plants, than are in the habit of doing so.—W. IGGULDEN.

ORCHID NOTES.

[Communicated by Professor Reichenbach to the Orchid Conference, South Kensington, May 13th.]

PROLIFEROUS ROOTS OF ORCHIDS.—There have been various records of buds originating on roots of Orchids lately, as in the instances quoted by Messrs. Lendy and Salter. I have long since attached great interest to such cases, but I have made only a few observations, one plant only having showed me this method of propagation. It is the Bird's-nest Orchid, *Neottia Nidus-avis*, which very often perishes after having flowered, while in other cases it produces fresh shoots from the axils of certain sheaths. In other cases it produces a fresh plant at the very top of a root-fibre. I saw this as long ago as 1849, when I observed the fact at Tharant. I learned very lately that it had been observed before by T. P. E. Vaucher in 1841. After Vaucher and myself it was seen by Irmisch, Prillieux, Hofmeister—who got it from me; then it was formally denied by Drude, but re-observed and neatly described by Warming, the excellent Scandinavian botanist.

The second case was observed in my *Phalænopsis deliciosa*, gathered in 1843 by Zollinger. My specimen shows a young plant on a root having just emitted a small rootlet of its own as described by Mr. Salter. This specimen can be seen in my herbarium.

The third case is a sad one. A *Cyrtopodium* (if I remember well, a savannah plant from Venezuela) produced a fine shoot from a root in Consul Schiller's collection, under Mr. Schmidt's able management, I believe, in 1867. I watched it carefully, but at length a young assistant gardener broke it accidentally, and threw the shoot and part of the root away, hoping the loss would never be remarked.

The last case is that of *Saccolabium micranthum*, Lindl. Director Lucien Linden lately sent me a fine *Cochin-Chinese* plant, with a young two-leaved shoot on a root. The whole plant was boiled and carefully dried. It may be seen in my herbarium.

THREE-LIPPED ORCHIDS.—I had seen various monstrous accidental cases of this kind. In all these there were no anthers developed at all, and the genuine free style had a terminal upright stigmatic hollow, without the least pronation (deflexion). The finest thing of this kind that ever came in my reach was a grand flower of *Oncidium Papilio* with three lips, three sepals, and a fusiform *Apostasio* style, without the least indication of anthers or filaments. It was most kindly presented me by my excellent second eldest English correspondent, Mr. J. Day. I remember to have seen a very fine *Cattleoid* flower of this kind (if I remember aright, *Lælia elegans*) in the hands of Mr. Thiselton Dyer.

All these cases were accidental, and as the stamens were absent I adopted the view of an *antagonismus* [compensation], the column being reduced, and partly made normal, to pay the vast expense of the luxury of three lips.

Some instances have, however, occurred to me, in which, together with three lips, the column was normal. This was observed a second time on the next shoots of the same plants.

The first case was that of *Oncidium prætextum* Læanum. The Sanderian traveller, Mr. Osmer, was struck by a panicle laden with such flowers, so that he made the laudable, but unusual, attempt to dry them. They are now, thanks to Mr. Sander's liberality, by my side, eight in number. The plant itself is in the glorious collection of Mr. William Lee, where it produced equal flowers, eleven of which lie before me, thanks to the kind possessor, who will, I hope, watch his precious unique, telling us long it lasts trilabellid.

The second case was observed by my highly valued correspondent, Major Lendy, both in 1884 and 1885. It is not quite so evident as the just quoted *Oncidium*, inasmuch as the *Phalænopsis Stuartiana* Lendyana has but one normal lip. Yet the petals approach much more lips than

petals. The blunt triangular blades are unguiculate, and bear a callus over the mid base of the lamina.

The third case is that of *Dendrobium nobile* Cooksonianum of Mr. Norman C. Cookson. The flowers are very distinct from those of the *D. nobile* Tollianum, having the petals very thick and hairy over the base, and with the same colour as the lip.

LUDDEMANNIA (CYNOCHES) PESCATOREI.—This so-called "genus" has proved exceedingly vexatious. It was the late Schlim who discovered it near Ocana when these were fresh hunting grounds. Director Linden sent a plant to the late Pescatore of La Celle de St. Cloud. There it flowered. I think but one flower is preserved in Dr. Lindley's collection. I have four of that typical inflorescence. Dr. Lindley took it to be a new *Cynoches*, an opinion we have seen lately re-accepted by an author, who acting on his own principles should have avoided doing so, as both the leaves and bulbs are those of an *Acineta* in our plant, while all the *Cynoches* have them like those of *Catasetum* and *Mormodes*. As soon

literally laden with pendent young inflorescences, one of which had developed and proved to appear a fresh *Luddemania*, showing fine marks of distinction. Messrs. Veitch were so very kind to let me have the plant. Unfortunately all the inflorescences perished *en route*, notwithstanding the excellent packing of the firm, but when the plant flowered next year it showed me the abominable inflorescence of *Acineta erythrocantha*.

A quite different *Luddemania*, the third one, appeared with a stiff erect inflorescence and quite peculiar flowers. It was discovered in January, 1878, by the late Wallis, who stated that it had the bulb of an *Acineta* and the leaf of a *Peristeria*. I am afraid Wallis made a mistake. I suppose Wallis intended to write that it had the bulb of a *Peristeria*, and thus it might be a sexual form of *Peristeria elata*. Grand inflorescences of the old *Luddemania Pescatorei* were collected and admirably dried for me by Mr. B. Roehl.

Finally, good plants of *Luddemania* were gathered by Messrs. E. Klaboch and Lehmann, perhaps on the same spot. I am not sure who



Fig. 107.—PROFESSOR REICHENBACH.

as I obtained both garden and wild-grown materials I published my genus *Luddemania* in honour of my late friend Luddemann, who had flowered it.

Director Linden having secured what one then called a great supply, let us say thirty plants, sent them to his correspondents, and acquired, by-the-by, a certain stoicism in enduring the most unfriendly letters from his customers, who accused him of sending *Acinetas* for *Cynoches*, and asking for the genuine plant. I believe Mr. Louis Schlim sent a second lot, all of which flowered as *Acinetas*. I remember to have seen Mr. Keferstein of Kröllwitz bei Halle a. S. quite angry about this, my *Acineta erythrocantha*, which he had paid for as a *Cynoches*, 1856. Director Linden, after having fully acknowledged Mr. Schlim's so often proved accuracy, told me all his bad experiences, finally adding, "*Je n'y vois que du feu*." As to poor Schlim, who may have got *des lettres à cheval* from Mr. Linden, he expressed his sentence on a label I have, stating, "*monstre d'un Peristeria*." The case was nearly forgotten; almighty Time had washed away the bad impression.

The "genus" reappeared with Messrs. Veitch. A fine rich plant was

came first. The majestic likeness presented at the sale is well known. I was led to regard Mr. Lehmann's plant as a new type from his representation and description, and the one dried inflorescence. The other inflorescence and two fresh ones proved to be the typical *L. Pescatorei*. I had the first from Consul Kienast Zölly, Hinslanden, Zurich; the other from an English benefactor, whose name will be, I hope, kindly supplied by Mr. F. Sander, who forwarded me a very well grown grand specimen.

It is my ardent desire to receive once more fresh illustrations of the pleiomorphic state of those flowers which may be sexes of *Acineta*, perhaps also of *Peristeria*. I have obtained well-developed seeds from the *Acineta erythrocantha* produced from the *Luddemania* of Messrs. Veitch. I hope much from the most skilful observer, Herr Consul Kienast Zölly, and of the English gentleman who had such fine flowers. I expect Director Linden of Brussels will feel a certain satisfaction if reading this note.

By the courtesy of the Editor of the *Gardeners' Chronicle* we are enabled this week to give a portrait of the eminent orchidist, Professor

Reichenbach, Director of the Hamburg Botanic Garden, who has for so many years given close attention to this wonderful family of plants. He has written much concerning them, but unfortunately his writings are widely scattered, and botanists have long desired a complete monograph of the family from the pen of one so able to perform the task satisfactorily. As the recognised authority upon Orchids, all new introductions are referred to him for identification or name, and nearly all the additions of late years owe their titles to Professor Reichenbach.

ROYAL HORTICULTURAL SOCIETY.

MAY 12TH.

SCIENTIFIC COMMITTEE.—Sir J. D. Hooker in the chair.

Nicotiana, hybrid.—Col. Clark exhibited a plant which he has raised between *N. rustica* (female) and *N. Tabacum* (male). The flowers were intermediate in character, of a pale rose colour, and it proved to be completely sterile, the ovary only swelling, but containing no seed.

Forget-me-not.—He exhibited a spray of the usually permanently red variety reverting to the blue form.

Lagetta lintearea or *Lace-bark Tree.*—He also showed sprays of the flowers of this tree.

Puccinia Vinca.—A communication and specimens were received from Mr. Plowright, who states that, although the Uredo spores and Teleuto spores were well known, he was now able to corroborate the statement that spermogones accompany the former. "The leaves thus affected exhaled a distinct odour. The plants bearing spermogones are taller than healthy ones. It is covered with dark brown spots, firm in structure. The leaves bearing them are dwarfed and thicker. The spots varied in size and colour, becoming paler with age, the oldest being surmounted by a delicate film of white dust. It consists of hyphæ continuous below with the mycelium, which pervades the whole plant, the threads being perpendicular to the surface. The free summits have colourless globose spores. In water they germinated. It is rare for *Æcidio* spores to be colourless; *Æ. Rumicis*, however, being so. The life history is therefore as follows:—1, A perennial mycelium pervading the plant, which every spring produces spermogones and *Æcidio* spores. 2, Uredo and Teleuto spores which arise from the *Æcidio* spores, which probably have localised mycelia of short duration."

Æcidium Beta.—Specimens of this fungus on wild plants were also sent by Mr. Plowright, who writes as follows:—"The *Æcidio* spores of *Uromyces Beta* are comparatively rarely seen. Having hitherto been unsuccessful in finding the *Æcidium* I determined to cultivate it from the *Uromyces Beta*, which occurs so abundantly every year upon Marigolds. I succeeded about ten days ago in producing upon the foliage of two Marigold plants there or four clusters of the *Æcidium* in question, but an accident happened to the culture, so that I am unable to exhibit them. Yesterday, however, I met with the *Æcidium* upon *Beta maritima* on the banks of the river Ouze at W. Lynn."

Saccolabium Attacked by a Longicorn Beetle.—Mr. McLachlan exhibited living specimens of *Dioxenes Taylori*, from Kew, and observed that it had been previously known upon *Phalænopsis* from the Philippine Islands, but it was very difficult to discover the real country.

Diopea pulchella.—He also exhibited specimens of this moth, which was reported to have settled in hundreds upon a ship in latitude 0.45' N. The nearest land was Brazil, but the probability was that they had been carried out to sea by the S.E. trade winds from Cape de Verd.

Silver Fir Attacked by Coccus.—Mr. Boscawen exhibited a branch attacked by *Chermes abietis* of very common occurrence.

Vine Shoots Dying.—Mr. Boulger showed specimens of leaves with impaired action, but it is not clear what the cause may be, though it might possibly have been scorching, as the appearances were the same on several sorts and occurred at the same time.

Hollies and Quercus Ilex Attacked by Insects.—Mr. Sanders of Lee, Kent, sent branches having the leaves much disfigured by some insect grubs. The Oak is a large specimen, and not a single leaf could be found which had escaped the attack. Mr. Maclachlan said the Oak was injured by the caterpillar of a small moth, *Lithocolletis messamella*, and the Holly by that small dipterous fly, *Phytomyza Ilicis*.

Adoxa Moschatellina Diseased.—Mr. W. G. Smith sent specimens with the following remarks—"I send examples of *Adoxa* diseased with *Puccinia saxifragarum, Sch.* According to the Floras the *Puccinia* appears in summer, but I, this year, found it in abundance before the winter had fairly left us—viz., on March 15th last, infesting the subterranean parts only of *Adoxa moschatellina*. The examples were growing in a high bleak position on Dunstable Downs. On April 15th the leaves of the host plant reached by the fungus, and on May 9th the floral organs and young berries were infested with the *Puccinia*, as the examples sent herewith show.

"In calling attention to the invasion of the floral organs and berries by the *Puccinia*, I have proof that not only does fungus mycelium often hibernate inside the membranes of seeds, but resting spores are sometimes produced within the seed membranes, and these resting spores germinate with the germinating seeds—in other words, many diseases of plants, as corn mildew, *Puccinia graminis*, are hereditary—i.e., the disease is transmitted from one generation to another through the seeds."

Vernation.—Mr. Henslow called attention to the fact that leaves in unfolding assume the positions and conditions identically the same as in sleeping plants at night. As Mr. Darwin had suggested that the purpose of the latter might most probably be to protect them from radiation, so he would venture (apart from verification) to offer the same explanation for the behaviour and conditions of expanding and developing leaves. Those conditions being: 1, An erect or dependant position, so as to place the blades at right angles to the horizon. 2, To protect as much as possible their upper surfaces. This was effected (i.), by contact of two leaves whenever they are "opposite;" (ii.), by being conduplicate, or folding together of the two halves of a blade. A very common method, (iii.) by overlapping one another; (iv.) by rolling up the blades singly or together, laterally, or from above downwards (a rare case as of the Tulip Tree); (v.), radiation would be also reduced by a rough surface, as occurs in many leaves, as Horse Chestnut, &c.; (vi.), by temporary clothing of wool (Coltsfoot) or stellate pubescence (Ivy).

Mr. Henslow illustrated all these cases. By exposing the leaves at night on grass instead of being protected as described, he found that Walnut and Lime showed marked effect from a moderate amount of frost. The other plants appeared better able to resist a few degrees. The experiment so far appeared to justify the inference that the conditions are most favourable for protecting the delicate growths from the effects of radiation.

Laurustinus, Fruit of.—Rev. G. Henslow showed sprays bearing fruit of last year. They were borne by a single shrub growing in a spot overhung by a Deodara, and otherwise shaded. Bushes well exposed bore none. The fruit is oval, of a bright metallic blue lustre. He remarked upon the curiously offensive odour given off by the *Laurustinus* when dying, especially when wet.

ROSES IN POTS.

WILL Mr. Bardney kindly supplement his valuable directions? Let him suppose his instructions followed out—plants potted in autumn—plunged until frost, then put into frames, pruned back to two or three eyes in February, and grown on all through the summer to make flowering plants in, say, the following February. Query, Are the plants at any time—and, if so, when—to be repotted between their first potting and their flowering season, fifteen months after? and, further, are they to have any other pruning before flowering than the first cutting back described above? I have no doubt that Mr. Bardney's instructions are in every way full and sufficient to gardeners, but it is just possible the above asked-for information may be useful to many amateurs in addition to—JOSEPH POTTS.

THE BIRMINGHAM BOTANIC GARDEN.

OPENING OF A NEW GLASS RANGE.

SINCE its establishment in 1829 this Garden has had varied fortunes, but during late years it has steadily advanced in importance and interest under the curatorship of Mr. W. B. Latham. The collection of plants has been greatly increased, and they have obtained considerably more than local fame for their healthy condition. It had long been felt that the glass-house accommodation was inadequate for the collection, and efforts were made to render it more suitable to the position held by the Garden, and how this was accomplished is thus described in the Society's report.

"Ever since the Palm house was built in 1870, it had been felt to be more and more desirable to complete the line of buildings on the terrace, especially as the new house was essentially a conservatory for special plants only, and could do little towards relieving the congestion in the growing-houses. Additional conservatory accommodation, but far more additional stove and greenhouse protection, was urgently needed, and the want of this was felt more year by year as the old dome house and its wings became more and more dilapidated.

"Nevertheless, from 1870 to 1883, the matter remained in abeyance, no one of the succeeding committees seeming to care much about grappling with the problem of how to raise the money, a reluctance which was greatly increased by the experience of the time and trouble involved in obtaining only £1400 towards the Palm house.

"So things went on, the representations of the Curator growing each year, and at last each month, more urgent as the collections increased, and the old houses became more useless. At last, in 1883, a sub-committee was appointed with instructions 'to consider the best plan for dealing with the present dome conservatory and greenhouse on either side, and the financial questions connected therewith.'

"The sub-committee at once commenced its labours, and in November of the same year, after an exhaustive inquiry, submitted its report. The conclusions arrived at may be summarised as follows:—

"1, That the old buildings on the terrace must be removed or substantially repaired.

"2, That if removed others must be erected, or the Society would suffer in prestige, and consequently in income.

"3, That it was not advisable to attempt a partial adaptation of the old buildings in connection with new ones.

"On these considerations they submitted plans and estimates, showing that to efficiently repair the old houses would cost, approximately, £1000; to erect a suitable range of new ones in their place, £3200; and in either case about £700 would be required in addition to pay off the existing debt, without making provision for which the sub-committee thought it would be useless to launch into fresh expenditure.

"Now there are only four ways of obtaining money at present known:—1, To earn it. 2, To steal it. 3, To borrow it. 4, To beg it.

"The Society was obviously unable to earn it.

"There existed practical as well as moral objections to stealing it.

"The sub-committee reluctantly rejected the idea of borrowing it, as inadvisable and probably, for the amount required, impossible, the Society having, owing to the conditions of its lease and the difficulties of realising on so large a collection at a forced sale, little to offer by way of security that would commend itself to a lender.

"There remained only to beg it, and this course, with a grave appreciation of the labours it would involve, and serious doubts as to the ultimate success, the report finally recommended.

"The General Committee, in its turn, carefully considered the report, and unanimously resolved to act on its recommendations, and advise the shareholders at the next annual general meeting to sanction the removal of the old buildings, and the erection of new ones in their place, and in the meantime to commence a vigorous canvass in the district for the sum required—viz., £4200. A special committee was appointed for this

purpose in the early part of last year, and at the general meeting in June they were happily able to report that something like £3300 was already promised.

"The sanction of the shareholders having been given, plans were prepared under the direction of a second sub-committee appointed for the purpose, and tenders obtained from six firms of horticultural builders. The lowest of these tenders, submitted by Mr. Henry Hope of Birmingham, was accepted, and the work at once commenced and continued without intermission, the season fortunately proving favourable.

"The work now completed, except as to some details, comprises the exhibition hall, 54 feet by 40 feet; the corridor, 98 feet by 19 feet 6 inches; the recess to corridor, 54 feet by 21 feet; four stove and green-houses, each about 35 feet by 24 feet, besides an entrance corridor and ladies' cloak room, a general outhouse, a boiler and stovehole, with new boilers and heating apparatus complete, a large stand for the orchestra, and some alterations in the house, with a complete set of sunshades.

"A potting-shed and a new wall to the back-yard have yet to be built, and provision made for the purchase of a large number of seats, together with other minor details.

"The whole of the above work already completed will cost just under

Mr. Latham, the Curator of these gardens, and the Committee decided on inaugurating the opening of the new buildings on May 13th by inviting some of the leading horticulturists to send plants for the purposes of a horticultural display, and notwithstanding the holding of the Orchid Conference at South Kensington on the same day, which prevented some of the London firms sending plants to Edgbaston, a charming display was made. Mr. B. S. Williams of the Victoria Nurseries, Holloway, sent a large number of plants, many of them new and rare, including *Croton Mortii*, *Anthurium Wardi*, *Sarracenia Toliaana* and *S. Maddisoniana*, *Hæmanthus Kalbreyeri*, and other interesting plants. Messrs. Cutbush and Son of Highgate and Barnet made up a large group on the floor, in which were Palms, Azaleas, *Hedera tulipifera*, and many other hardwooded plants. This firm also contributed a second group, consisting of some of the best *Ericas* (flowering well), *Aphelaxis*, *Pimeleas*, *Boronia serrulata*, and other hardwooded plants, and examples of Mushrooms from their milltrack spawn.

Messrs. Sanders & Co. of St. Albans sent a handsome group of Orchids—fully one hundred plants—and these were greatly admired. The pretty *Masdevallias* were objects of interest to a great many, especially *M. Shuttleworthi* and a very fine variety of *M. conchiflora*. This collection



FIG. 108.—NEW RANGE OF GLASS HOUSES IN THE BIRMINGHAM BOTANIC GARDEN.

£3000, and it is hoped, after making provision for the debt of £700, that the remainder of the work yet requisite to finish up the other jobs in connection with the new buildings may be executed, so that the total sum expended shall be kept within the original estimate of £4200.

"This very satisfactory result has only been obtained by the closest attention to economy in all directions, but particularly in the minor details, by the sub-committee, and by a constant personal supervision. Messrs. Chance Brothers, with their usual generosity, have also assisted greatly in keeping down the expenses by supplying the whole of the glass at cost price. Messrs. Milward, Balden & Co. have most kindly undertaken the necessary legal business without charge, and in other directions there can be no doubt that the work has been executed for little more than cost price. Altogether it is probable that the whole scheme will be carried out for quite 20 per cent. less than it would cost a private owner.

"Towards this sum of £4200 about £3650 has already been subscribed, and it is hoped that the remaining £550 will soon be made up. The cost of maintaining the new buildings and the increased collection of plants which this erection renders possible, it has been carefully calculated will be about £200 per annum, and as the ordinary income of the Society has hitherto barely sufficed on a long average of years to meet its ordinary expenditure, it will be the next duty of the Committee to see what can be done to augment it. Several subscribers have already promised, without solicitation, to increase their present annual subscription of one guinea, and it is hoped that this example will be largely followed in consideration of the great additional attractions now offered, and also that many new names may be taken up, and new subscribers obtained."

included the rare *Dendrobium carniferum*, *Odontoglossum Ruckerianum*, *Lælia elegans Schilleriana*, two fine specimens of *Dendrobium thyrsoflorum*, *Odontoglossum citrosimum album*, very fine strains of *Cattleya Mendelli* and *C. Mendelli superba*, and a grand lot of *C. Mossiæ* varieties.

Messrs. Shuttleworth, Carder & Co. of Clapham contributed a charming group of well-flowered plants, in which the most noticeable were *Oncidium fuscatum* (well coloured), *O. concolor* and *O. cucullatum*, *Cypripedium Lawrencianum*, *Masdevallia Shuttleworthi*, *Odontoglossum cirrhosum*, *O. hystrix*, and *Cattleya Mendelli*.

Mr. Cooper, gardener to the Right Hon. Joseph Chamberlain, M.P., staged a good group of Orchids, especially strong in *Masdevallias*, of which there were examples of *Harryanum coerulescens*, *M. H. violacea*, and *M. H. lilacina*, *M. ignea*, *M. Chelsoni*, *M. Veitchi*, very fine, and others; a finely flowered and well coloured *Dendrobium Freemanii*, a fine plant of *Epidendrum bicernutum*, *Lælia purpurata alba*, and *L. elegans Schilleriana*, very beautiful; *Vanda suavis Veitchi*, *Chysis bractescens*, and *Odontoglossum Coradinei*. Mr. Thompson, gardener to H. W. Elliott, Esq., also contributed a small collection, which included good plants of *Odontoglossum cirrhosum roseum*, a very fine variety of *Cattleya Mossiæ*, *Oncidium Marshallianum*, *Chysis bractescens*, a magnificent specimen; *Cymbidium Lowi*, with seven large spikes; and a good healthy *Odontoglossum Roetzlii album*. The gentlemen's gardens in the neighbourhood gave valued help by the formation of groups of plants. Mr. Walter Jones, gardener to C. E. Matthews, Esq., Edgbaston, had a handsome group of Palms and ornamental plants, Azaleas, Ferns, Orchids, and other plants. Mr. W. H. Dyer, gardener to Mrs. Marigold, Edgbaston, also contributed

a charming group, which included fine Palms and other plants. Mr. W. Jinks, gardener to J. E. Wilson, Esq., Wyddrington, sent a very fine group, in which were some superb specimen Azaleas of great size and beauty, and in whose collection was a good plant of *Hæmanthus cinnabarina*. Mr. Brasier, gardener to the Mayor of Birmingham, staged a pretty group of plants, and another group near it was contributed by the Right Hon. Joseph Chamberlain, M.P. Walter Chamberlain, Esq., sent a most interesting collection of Japanese Maples, many of them exceedingly bright in colour, and containing many newer kinds.

The local nurserymen also helped the Exhibition materially. Messrs. Thos. Hewitt & Co., Solihull, sent a large and bright group of plants, some Auriculas, and plants in flower of *Primula cortusoides amœna* varieties. Mr. Hans Niemand set up a very tastefully arranged group, in which a superb specimen Climbing Asparagus, and a grand basket of *Nephrolepis davallioides furcans*, were conspicuous. In this group were some fine plants in striking character of the beautiful *Caladium Baroness James de Rothschild*, some fine plants of *Lilium longiflorum*, rare Ferns, and other plants. Mr. R. H. Vertigans, The Chad Valley Nurseries, set up a good group, including Tuberoses, *Lilium Harrisii*, Herbaceous and Alpine plants, and some excellent examples of *Saxifraga pyramidalis*. The Cranston Nursery Co., Limited, staged two boxes of fine Rose blooms, chiefly Teas and Hybrid Teas.

SUMMER TREATMENT OF TEA ROSES.

HAVING been very successful with Tea Roses last season, a few notes may be acceptable to readers of the Journal, as the collection comprised all the best and most popular varieties in cultivation. The system carried out was the means of allowing us to cut on an average six dozen good blooms every morning from early in July until about the second week in October. Those gardeners who have to supply cut flowers in quantity to a large establishment know the attention that is bestowed on these lovely Roses. We often hear the remark passed when Tea Roses are not looking or thriving very well that they will not succeed in the soil, or the position is not quite right, when it is only rational attention which is required.

The ground the Tea Roses were planted on was well drained, and the soil worked into good condition by bastard trenching, with the addition of some well-decayed manure. The Roses were planted when the soil was in good order, and a shovelful of turfy loam was placed about the roots of each. The pruning was performed about the 20th of April, and the beds were then mulched with some partially decayed manure. When the plants had started into growth, and the shoots had grown about 2 inches, we made it a practice to go over every plant twice a week to disbud the shoots where growing too thickly and destroy aphides. By making it a practice twice a week we saved a lot of labour. If the least trace of aphides was seen the shoot was dusted with tobacco powder, and once a week until the first blooms appeared they were syringed with soapsuds. The weather having become dry every plant received 3 gallons of water a fortnight, and the latter part of the season liquid manure. When the first bloom buds appeared, and all through the season, we took off every one which would not be required, as it is very unwise to leave buds that would not be open when the blooms were ready for cutting; and by picking off these useless buds, as it were, extra vigour is thrown into those which are left, and every Rose can be cut with one or two healthy green leaves and a length of stem suitable for any purpose. If any of the flowers were full open in the morning we cut them, rather than let them remain to exhaust the plants and blooms which were to come. By following the above practice the plants grew to a large size, and were continually blooming until stopped by cold nights.—A. YOUNG.

GRAPES CRACKING.

I AM surprised that both Mr. McIndoe and "A Thinker" should ignore the ordinary channels through which sap and moisture are supplied to fruit—namely, by the stem, and instead give the whole credit, or rather discredit, to the skins of the berries, and that simply because they are separated from the Vine or plant.

When Grapes are preserved after being cut away from the Vine they are generally placed with the cut stem inserted in water to draw their supply in the usual way, as are many other garden products, such as cut flowers, &c. Cucumbers and French Beans, with their stems in water draw their supply in this way for a long time, as every gardener knows. Is it not therefore more likely that Grapes, although separated from the Vine, but excited by a warm and moist atmosphere, absorb the moisture through the stems than through the skins of the berries? If the skins are so porous that moisture enters through so easily, why not make its exit that way under the pressure of the expanded juice? Is it not more reasonable to think that the supply, whether from the roots or surrounding atmosphere, finds its way in through the stems, influenced by too high a temperature, and having no outlet, and the skins, being incapable of expanding, give way and burst?

I for one fail to see how either of the above-named gentlemen have proved that the skin is the medium through which moisture enters, and so causes bursting.—HUGH HENDERSON, *Co. Antrim*.

NOTES IN A NURSERY.

WALKING through the nurseries of Messrs. Dickson & Sons at Upton, Chester, the other day, I was struck with the beauty of some of the spring

borders. The innumerable fine Daffodils were in full beauty, several varieties of *Narcissus poeticus ornatus*, *angustifolius*, *Burbidgei*, &c., succeeding in continuous order. Amongst other varieties I noticed the following:—*bicolor*, *Horsfieldii*, *Empress*, *Emperor* (worthy still to hold the place assigned to them by their title), *Jonquilla* and *incomparabilis* in great variety. There were also several hybrids which are very distinct, such as *Leedsii*, *Leedsii maximus*, *Stella*, &c.

Wandering from the Daffodils I found some fine beds of *Triteleia uniflora* in full flower, and in good contrast a fine patch of *T. violacea*, a very fine coloured variety. Early in the season I noticed *Chionodoxa Lucilliae*, which was in flower for more than a month. The fact that it remains in perfect bloom so long is a feature worth noting.

Iris reticulata, too, is an early gem. I was told it also yielded a succession of flowers for more than a month.

The well-marked foliage of *Erythronium Dens-canis* sets off the flowers well, and I noticed a very striking and distinct species in *E. giganteum*, throwing up a fine strong stem 6 to 9 inches, with beautiful pale yellow flowers.—JOHN EDMUNDS.

THE ORCHID CONFERENCE.

MAY 13TH.

IN our issue of the 14th inst. we gave a report of the Exhibition and the two principal papers read, but the others, together with the discussion, had to be reserved until this week. For the verbatim report which follows, together with the portrait of Professor Reichenbach (page 419) we are indebted to the *Gardeners' Chronicle*.

Sir Trevor Lawrence, Bart., M.P., President of the Council, occupied the chair. The attendance was exceedingly good, and great interest was taken in the proceedings.

The Chairman, in opening the proceedings, said: The business of the Conference on Orchids which we are now about to commence has largely to do with the botanical and scientific aspect of the cultivation of Orchids. I need hardly say that I should not venture to express any opinion whatever on matters of botanical science in connection with this subject; as it is only as a horticulturist that I have the honour to occupy the position which I do occupy, and therefore I must ask you to be so kind as not to suppose that I am in any way assuming or professing to give any opinion on botanical questions. I think you will one and all agree with me that the Conference Committee and Royal Horticultural Society have every reason to be satisfied with the success which has attended the Conference. I very much doubt indeed whether such a collection of Orchids has ever been gathered together as we have in the conservatory below; and I believe that it would be impossible to gather together such a collection of Orchids as is there displayed in any other part of the world. The thanks of the Conference Committee are due to those amateurs and to those members of the trade who have helped us on this occasion, and on behalf of the Committee I beg to tender you our very sincere thanks for your exertions and efforts to make the Conference and show a success. The Royal Horticultural Society has for many years been under a great debt of gratitude to the horticultural trade, who have at all times supported us to the best of their ability, and who have largely contributed to the success of this Conference and our Show. Under the somewhat new aspect our horticultural trade has assumed, several principal nurserymen are at the present moment very much interested in shows of Orchids on their own premises, and therefore we could hardly have expected them to denude their own premises for two days of the principal attractions that they would have; and while we are considerably indebted to the horticultural trade for the help they have given us, there is no doubt that the great bulk of the show is made up by the contributions of amateurs about London. I hope on another occasion we may have help from amateurs all over the kingdom. We should very greatly like to see some of those magnificent Orchids of which so many of us have only read, from the neighbourhood of Liverpool and Manchester. I have reason to believe that visitors who have come to this Conference from those parts are fired by the spirit of emulation, and will do all they can to show that they can cultivate Orchids as well, if not better, in the north than we do in the south. With regard to the excellence of the show, I think I may be allowed to quote the authority of no less a person than Sir Joseph Hooker. He expressed to me and to other persons his very great admiration for the show, and his great appreciation of its value in promoting the cultivation of Orchids; and when we consider that Sir Joseph Hooker, who, like a great many other persons who study the scientific aspect of botany, is not very enthusiastic on behalf of shows as a rule, I think this testimony is all the more valuable. Referring to Kew, I think it is very much to be regretted that, mainly owing to the excessive economy with which money is given to that very valuable institution, there is no sufficiently representative collection of Orchids there at present. I believe the authorities at Kew are fully alive to the very great interest which is being taken in this subject throughout the length and breadth of the kingdom, and we hope that they will do their utmost to ensure this result—that the collection of Orchids shall be equal to those of the other natural orders of plants; in fact, it would be unwise if they should not do so, because it is very much the custom and very much the fashion with gentlemen who possess collections, when they leave this world, to leave their collections to public institutions; and I do not see the least reason to doubt that, if there are fine ranges of Orchid houses at Kew ready to receive plants, some wealthy bachelor will leave his collection to the public, as being perhaps, on the whole his best heir. With regard to the absentees from the Conference, I am requested by Professor Reichenbach to express his very great regret that threats of an attack of pneumonia prevented his being here. I know of the reality of his regret, for he has been longing and has been most anxious to see the skill which has been displayed and enterprise which has been shown by English orchidists. He has been kind enough to send a paper, and he writes to say that had he been here he would have expressed his warm thanks to orchidists, and especially to John Lindley—a name than which, in connection with the science of Orchid-growing, there is no other that commands greater respect. While in the absence of Professor Reichenbach we lose one of the best scientific exponents, the loss is also his, as he would have thoroughly enjoyed seeing the collection we have

here. Dr. Paterson of the Bridge of Allen says how deeply interested he is in the objects of the Orchid Conference, and he sincerely wishes it every success, as for half a century he has derived very great pleasure and instruction from the cultivation of all kinds of plants. We also regret the absence of plants which might have been sent from the Duke of Sutherland's, as more splendid species of *Odontoglossum* than those at Trentham cannot be seen in any other part of England. I do not suppose in any family of plants there is anything approaching the extraordinary variety which Orchids display. You get what appear to be in all respects totally different flowers growing on the same plants. Almost all epiphytes grow upon trees.

A most singular circumstance connected with Orchids is the peculiar contrivance by which it is hardly possible for them to be fertilised except by the intervention of insects or the hand of man. Nothing has been more remarkable than the rapid increase of our knowledge of this family. Looking back to the first volume of the *Botanical Magazine*, which appeared in 1787, I find in the first ten volumes—from 1787 to 1796—that there were only two Orchids illustrated out of 360 plates. If you go to the first ten volumes of the third series of the *Botanical Magazine*, which appeared in the years 1845 to 1854, you find, on the other hand, that there are a hundred different species of Orchids illustrated out of the same number of plates. Now, so far as the possibility goes, it would be quite possible to fill almost every number of the *Botanical Magazine* with new species of Orchids, if it were desired to do so. I may say I have occasionally, as a subscriber to that periodical, been disposed to complain that we do not get a few more Orchids in it. I think sometimes they might very worthily replace some of the rather insignificant foreign weeds which appear there. I believe there are hardly fewer than 5000 species of Orchids known. Of that number there are close upon 2000 in cultivation. With regard to one particular genus (the *Dendrobium*) I have had in my collection no less than a hundred species in cultivation at one time. There is another curious circumstance in connection with Orchids. I do not see that with regard to most of them there is any reason why they should ever die. Parts of Orchids are annually reproduced in a great many instances, and death need not take place except through being in captivity or from errors of cultivation. I suppose it is quite as possible to give to plants, especially Orchids, such constitutional diseases as we human beings suffer from, such as gout and other things; and it is quite as possible to give like diseases to plants by injudicious diet and by feeding them too well or on improper food. There is another curious circumstance with which I think the industry of collectors is making us better and better acquainted. There exist albinos in some of the principal genera of Orchids, such as *Cattleya* and *Dendrobium*, and this shows the contrariety of human nature in regard to these genera. We search and endeavour to secure albinos; and when we have flowers which are white we search and endeavour to secure coloured varieties. With regard to the collection of Orchids, in former years collectors were sent out by wealthy amateurs, gentlemen who desired to adorn their gardens with new plants, new flowers—gentlemen such as the Duke of Devonshire, the Duke of Northumberland, and other persons occupying similar positions. Of course, this Society did a great deal of very good work by employing very enterprising, skilful collectors. All this, so far as private people are concerned, has come to an end, and I think, perhaps, on the whole, it is to the advantage of the cultivation of Orchids that this matter should have passed into the hands of business people, who collect Orchids as a matter of commerce. In referring to that for one moment one would not do justice to several of the persons to whom we owe so many of the beautiful species, if we were not to pay some personal tribute to them. The firm of Messrs. Hugh Low & Co. have for many years devoted themselves, their capital and enterprise, in this direction. Then there are Messrs. Veitch & Sons, Messrs. B. S. Williams & Sons, Mr. Bull, and Messrs. Backhouse. Many other firms have in years past devoted a great deal of enterprise to this matter. I have got a list of the countries that have been covered by the collectors of one firm only. These are—the Argentine Republic, Borneo, Brazil, Guiana, Ceylon, Costa Rica, Ecuador, Guatemala, British Honduras, British India, Upper Burmah, Jamaica, Java, Labuan, Madagascar, Mexico, Celebes, Uruguay, Nicaragua, Panama, Malay Peninsula, Singapore, Philippine Islands, Trinidad, San Salvador, United States, Columbia, and Venezuela. This shows at all events that there has been no want of very wide travel on the part of the collectors, and perhaps it may lead some people to suppose that we have very nearly collected all the Orchids we are likely to get. I do not think this is the case. In regard to one Orchid, one of the principal importers of plants told me his collectors had been searching for it for many years, although it was known about where it grew. I refer to the *Odontoglossum nævium majus*. Perhaps some day it may be found in profusion.

With regard to one subject, I think the public seems to take great interest in Orchids. Anybody who is accustomed to attend auctions knows that every now and then some foolish persons, like myself, are carried away by the momentary spirit of competition, and we give more than the plants are really worth, and this applies to all collectors. What I would venture to say in regard to the price of Orchids is this: it is never very wise or judicious to give a very large price for imported Orchids, although they may be said to be extremely rare, because some collector may turn up to-morrow with a shipload of the same flower, and what you gave 60 guineas for one day would, perhaps, not be worth more than as many shillings the next.

I think it more reasonable for wealthy persons to give a considerable price for Orchids which have been raised by cross-fertilisation in this country, because they are the results of horticultural skill that cannot be imported from abroad. When you consider the vast amount of careful watching and labour which is involved in coaxing a seedling *Cattleya* into a flowering state, I think you may fairly admit there is some good ground for the persons who have succeeded in raising seedling *Cattleyas* to consider themselves entitled to charge a large price for them. I think I am correct in saying that the first seedling *Cattleya* that was ever raised in this country was seventeen years before it flowered, and during that time it required very careful watching. With regard to imported Orchids, I should instance that in the present Conference there are three very beautiful varieties in the collection which is shown, and for which we are indebted to Baron Schröder—*Odontoglossum crispum Veitchianum* and *Odontoglossum crispum Sanderianum*. One of them is suffused with a sort of port-wine stain, and another is very richly spotted. I believe we might spend a lifetime and flower

hundreds and thousands before we could get three such varieties as these are. Of course you all know when you get any exceedingly rare, and at the same time beautiful plant, it is naturally competed for on all sides, and is sold for a large price, and I think there is full justification for its being so.

Professor Reichenbach's paper (see page 418) was then read, and was followed by Mr. Veitch's paper on Hybridisation, which was received with the greatest applause, and in the discussion which followed:—

Dr. Masters, F.R.S., said: As a botanist, I have listened to this paper with the utmost admiration. I have been struck with the value and number of the facts brought forward, many of them of such great interest as to render this paper one of the finest which has ever been read before this Society. The only contribution I would make in the way of discussion is this—that among the hundreds, perhaps thousands of Orchid seeds that I have seen, not one-tenth have been perfect, and this is the reason, in all probability, why so few have germinated under Mr. Veitch's care. The perfect Orchid seed is a nearly circular or elliptical bag or membrane, with a minute microscopical germ inside. Not in one-tenth of the seeds I have seen has this germ been present. Of course this is absolutely necessary to germination, and without it no seed can germinate.

The Chairman said: Mr. Veitch has mentioned my name as one who has had some experience of late years as a hybridist. I can entirely corroborate if it were necessary what has been said about the exceeding difficulty of getting fertile seed, and in Mr. Darwin's book on the "Fertilisation of Orchids" he mentions having microscopically examined seeds sent to him, and he found there was in an entire pod perhaps one fertile seed. Every now and then—but this is most exceptional—seedpods have produced a vast number of fertile seeds. I have bought a *Cypripedium* which has produced a large number of plants—so large a number, in fact, that we have been constrained to throw a large quantity away. This was owing to the crossing of two *Cypripediums*. With regard to *Dendrobium*, we have pods which have produced a very large number of plants. With regard to *Odontoglossum*, we certainly have had seed germinate, but it has only lived to arrive at a very small size, which could scarcely be distinguished, even with the aid of a microscope, and has very speedily died. So far as the very small experience that I have had as a hybridist goes, I should say it is far more difficult to raise seedlings of some of the hybrid crossings than to raise delicate children, and those errors that I referred to in my opening remarks on the importance of diet and treatment, which I am afraid all our intelligence has not enabled us to avoid in regard to children, the little experience we have had of the progeny of Orchids will not enable us to avoid similar errors in regard to these flowers. Mr. Fitzgerald, in his book on "Australian Orchids," shows the extreme difficulty with which, in Nature, Orchids are fertilised; but he refers to a magnificent *Dendrobium speciosum*, called the Brisbane Lily, which had as many as 40,000 flowers open on the same plant at the same time. The plant was quite open to the visits of insects of every description.

The Chairman then alluded to the award of the Veitch medals, alluded to in our leading article.

Mr. Veitch, as representing the Veitch family, said: I am gratified to see that the medal founded in honour of my father's memory should have been given to Mr. Seden. He has been twenty-five years in our employ. He entered my father's service, and a more zealous and skilful foreman it would be difficult to find. Therefore I wish to bear testimony to my pleasure at Mr. Seden receiving a Veitch medal.

Mr. B. T. Lowne: One of the difficulties in rearing seedling Orchids arises, I believe, from the fact that the pollen is only developed from the proliferation of the mother cells after the pollinia are placed upon the stigma. It is possible, I think, that the stimulation due to the presence of the pollinia gives rise to the development of the capsule even whilst the ovules remain unimpregnated.

Mr. James Bateman: I have very great pleasure in proposing a vote of thanks to Mr. Veitch for his admirable paper. I am sure he and Mr. Dominy will know the effort it causes me to make this proposal, for I have been brought up with the very strongest aversion to hybridists. I fell into evil hands early in life. My first orchidist friend was Mr. Huntley. When I paid him a visit at his snug little rectory in Huntingdonshire, he pointed to his Cacti and Orchids and said, "I like these plants. They are the only plants I grow, because those dreadful fiends (meaning hybridists) cannot touch them." You must make a little allowance for the botanist, because you hybridists do give botanists a little trouble. However strong my prejudices were I must confess that when I saw such plants as your *Cattleya*, if I was not converted, at all events, what came to the same thing, I was "shut up."

Mr. John Day seconded the motion, which was carried with acclamation.

Mr. Veitch, in reply, said he was exceedingly obliged to the Conference for their kind vote. Mr. Bateman was a kind-hearted genial gentleman, and he had always asked himself what could be the reason of Mr. Bateman's conduct when that gentleman went to his house, because he always adopted a very severe manner when he went near a hybrid. He could understand the whole matter now, and he was glad to know that Mr. Bateman had lived sufficiently long to give up his horror of hybrids, and he hoped he would still be able to name one of those flowers after Mr. Bateman.

Mr. J. O'Brien then read his paper on "The Cultivation of Orchids." Professor Michael Foster said, as there did not seem to be any intention of discussing the last paper, he would propose a hearty vote of thanks to Mr. O'Brien. The motion was seconded and carried, and the Conference then adjourned till 2 P.M.

THE NOMENCLATURE OF ORCHIDS.

Mr. Lee took the chair in the afternoon, and intimated that the subject for discussion was "The Nomenclature of Orchids."

Dr. Harvey, Liverpool, who opened the discussion, said: I feel very great diffidence in speaking in the presence of men who have given so much attention to the subject, but my excuse must be that I feel strongly on the subject. I think that if a conference was required for the nomenclature of Daifodils, it must be necessary for the nomenclature of Orchids. The great difficulty we have to contend with to-day is the absence of Professor Reichenbach. I do not think it is in the power of this Committee to decide that the Orchid Conference shall be permanent, but something should be

done in the way of that accomplished by the Daffodil Committee. The proper authorities of the Society should, on the recommendation of this meeting, make the Orchid Conference Committee a permanent one, and it should take steps to secure the presence of Professor Reichenbach on the future Committee, which should go into this question in a systematic and scientific way.

Mr. Lee: The question of the nomenclature of Orchids is an exceedingly difficult one; I am afraid it is one that cannot be dealt with on this occasion. When we put this question down for consideration it was always hoped and expected that Professor Reichenbach would carry out his promise to come to this Conference, and we intended to refer the whole question to him, and to get him to give us a paper on the nomenclature of Orchids.

MANURES FOR ORCHIDS.

The Chairman called on Mr. Alfred Borwick, who said: I have some difficulty in complying with the request of Mr. Lee, because the idea of anything like a manure is horrible to most Orchid growers. It has often been a source of regret to me, and no doubt many gentlemen here have felt the same, to see so many Orchids dwindle, if not possibly pass out of existence—not from any want of care or devotion, for that is generally in excess of the demand, but apparently from deficiency of strength, or, in other words, "starvation." I am led to think this must be the case from information conveyed by travellers and collectors, that birds throng the trees upon which Orchids are found, and that they supply in their dung a rich diet, containing, as it does, ammonia, phosphoric acid, and some potash, which is washed by the rains and dews into the interstices of the trunks, so that the plants not only enjoy the advantage offered by residence on living trees, but the stimulant and food provided by the birds. Terrestrial Orchids in the same way have the benefit of decaying vegetation, which supplies stores of ammonia. As soon as plants come into house cultivation there is at once an end to these rich manurial provisions, and they have to depend upon moss, peat, charcoal, and crocks, with possibly occasional charges of liquid manure, for their subsistence. In all the soils and ingredients used for potting Orchids there is little trace of potash or other manurial constituent, and nothing goes to promote the development of fibre in plants like potash. The aim is to produce bulbs of largest size and firmest growth, but that is impossible unless there are healthy roots in abundance, and these roots can obtain a sufficient amount of nourishment to supply the fibres, of which the bulbs mainly consist. The manure which I have used for some time is that of Messrs. J. Jensen & Co., 10, St. Helen's Place, E.C., who are engaged in the manufacture of fish manure at the Loffoten Islands, the seat of the great Norwegian cod fisheries. When I tell you that this year, from early in February to Easter, no fewer than 32,000,000 of large fish were caught you can form some slight idea of the magnitude of the fisheries. The fish are gutted, the bodies salted for food, the livers go to make oil, while the heads and backs are available for manure. They are dried, pulverised, and reach England in the form and condition of flour. The average manurial constituents of dried codfish are 10·60 ammonia and 30 phosphates. Grand as these ingredients are in themselves, they are wanting in one thing—viz., potash. If this is absent it is impossible to obtain perfect fertilisation; wherever it is present in due degree the effect is astonishing in the vigour and rigidity of plant growth. Refined salts of potash and magnesia are added to the fish manure, and at once produce a perfect fertiliser of similar constitution to bird dung, and containing the essential constituents of ammonia, phosphoric acid, and potash, in the form most available for plants. In this manure there is no acid used. Fishbone is very gelatinous, and when sufficiently pulverised dissolves in the soil, so none is needed. Seeing, as I did, the effect of this combination on all pot plants, it struck me that Orchids might like it also. Last August I began to experimentalise upon a plant of *Cymbidium Lowii*, and requested my gardener to put half an ounce on the soil. We soon observed a darker colour in the foliage; in four or five weeks two strong growths appeared, which proved to be flower spikes as they grew; more fish potash was added from time to time. Since then there are five breaks, four of them of strength sufficient to content anyone. I then ordered its use for all terrestrial Orchids, *Lycastes*, *Calanthes*, *Sophronites*, *Phaius*, *Zygopetalums*, *Odontoglossums*, *Masdevallias*, *Dendrobiums*, and even for *Oncidiums* and *Laelias*. So far vigour seems to be on the ascendant, and I see no reason whatever to retire from the line taken up, or to alter my views. The plan of operations is simple. My gardener uses more peat round the sides of the pots, and he merely dusts the peat with a pinch of the manure, and wherever the fish potash is there the roots work. Mr. Wm. Bull told me a fortnight ago that it was a vexed question as to what extent manures could be used for the cultivation of Orchids, and one which demanded the consideration of growers. The manure to which I have alluded is very easily obtained and applied. I would not recommend anyone to make trials, except on plants of little value, and then no harm can be done; if it is found serviceable in the way indicated, there will then be time to consider a wider application.

Mr. James: For some years past we have been in the habit of using horse urine, and it has proved very beneficial, especially in the growing season. We are using it largely for the stages and paths at night, when quickly there arises such a heavy dew. I think if we take into consideration what Mr. Borwick has already hinted at, that plants invariably suffer extremely after carrying their heavy spikes, and this seems to impress upon one the thought that there is some necessity for sustaining the strength. The question has been raised of late years as to whether Orchids benefit from having their spikes removed after they are formed. I have no doubt in my own mind that it is of advantage if you want to gain strength for the plant. I have instances of the best *Odontoglossum Alexandræ*. Two years ago we took very special care of it. Somehow a small slug got at it and ate the spike. It at once began to make two bulbs, but most unfortunately last year the spike got eaten off again. The result has been that this year it has made a double growth from each bulb, and it has now four leads to the plant, which has been accomplished in bad years; and marvellous to say it has sent up nine spikes to the flower, an instance which I have not seen before in an *Alexandræ*. One bulb has three spikes on the side of the double leaf. I take it for granted that this must be merely a question of strength from resting the plant. I think that as regards the question of nutriment, it is not so much a question of what kind is applied, but how it is applied. With reference to syringing, we have always used

weak liquid manure on to the surface of plants, and a moderately good practical rule is not to use it strong enough to injure the flower. I contend that the syringe is beneficial in the growing season, especially when the nights are genial and there are no frosts. I think that manure is quite beneficial, and I have satisfied myself on the many different things we have used. The difficulty with many in using artificial manures is, that they begin by applying it too strong. They should ascertain what strength the plant is capable of bearing, and if this were done we should not have so many failures.

Mr. Burbidge: I have no doubt that taking the spikes off plants must be of the greatest possible benefit to the plant.

Mr. Drewitt: I know an instance where a gentleman cut the spikes even before the last flower on the spike had expanded, and it was owing to this practice that the plants were the finest specimens I ever saw. Mr. James tells us we must not use the manure too strong. I think the best point in Mr. Borwick's speech was when he told us to use the manure on our common plants. Unless we have some more accurate data we are merely playing with fire.

Mr. Heath (Cheltenham): The question of watering Orchids with manure is a very difficult one. There is no doubt that many Orchid growers water their plants with manure, but they like to keep it to themselves. As regards Orchids, we have not used it over the tops of the pots. We had an *Odontoglossum Rossi*, and we used on several occasions cow manure, sheep manure, and horse manure, and we also used in addition a small quantity of soot. We found our plants were very vigorous for a year or two, but after that we were bound to wash the entire plants out, for we found they got rather a yellow hue. Since that time we potted them, and instead of watering them overhead we have thrown down in the house nitrate of soda and ammonia. We find that where ammonia has been thrown down the plants became of a most brilliant green colour. We have had that now for six years.

Dr. Masters said: With reference to this question of manuring we must go back to first principles. In the first place we do not know the chemical composition of the leaf or of the flower, nor indeed any part of the Orchid plant. Until we know that we cannot have any definite rule as to the right manure to supply and the right time to do so. It may, however, certainly be said without fear of contradiction that all plants (Orchids not excepted) want food. What is the right food to give them, and at what time? The proper food to be given them at one time is that which will make bulb and leaf, and which at another will enable them to form flower and seed. The structure of Orchids also is most extraordinarily diversified. The internal structure in the same genus differs widely, but whether the food to be given should be correspondingly different, must be found out in the future.

Mr. James: Do we understand that this Orchid Conference will be repeated at a future time? If so, I may suggest that on a future occasion we might exhibit plants that have been subjected to the various methods of treatment mentioned.

The Chairman: I cannot give any promise that this Conference will be repeated, because we have hardly got so far as that. This Conference brings no grist to the mill of the Horticultural Society. It is done from a pure love of Orchid-growing. I should say, speaking from my own feeling on the subject, that this Orchid Conference should be repeated.

After some further remarks the Conference broke up with the customary votes of thanks.

POINSETTIA PULCHERRIMA.

PROBABLY most cultivators of this brilliant winter plant have their Poinsettias freely growing now. They were shaken out some time ago, repotted, and are on shelves in some well-heated structure making rapid growth preparatory to large and highly coloured whorls of bracts to set the houses aglow at Christmas time. Where fine heads are required irrespective of length of stem the plants cannot well be started too early, provided that conveniences are at hand for growing them on without check. When started early two conditions are essential to success—the plants must have heat sufficient to keep them healthy, and light to keep them as sturdy as is consistent with their nature. Not in all places where Poinsettias are required can these conditions be found. There may be heat but not light, and as a consequence the plants become drawn. By this cause are many failures, or at the best partial successes. A stove, it may be, is provided in which to flower the plants; but this structure, being devoted to Ferns and foliage plants in the summer, requires to be shaded, and the other houses which afford the requisite heat are vineries, and their roofs are covered with foliage. But still those who have a stove in which a night temperature of 60° is kept up in winter expect to have Poinsettias, whether there is any suitable place for growing them in summer or not. Certainly a shaded stove or fernery is not suitable, neither is the vinery which is darkened by foliage. Now with these, and only these, conveniences—a shaded stove and vinery in which to prepare Poinsettias, the best plan to adopt is to defer starting the plants until late in the spring—*i.e.*, about the second or third week in May, and instead of growing them in shaded houses prepare the plants in light frames.

Frames usually known as "cold" are really—or may be made so—admirable miniature stoves in summer if the sun heat is carefully conserved and moisture afforded to make the atmosphere genial. These are very suitable in which to grow Poinsettias during the months of June, July, August, and September. This free, healthy, unchecked growth for four months is sufficient to prepare valuable decorative plants for winter effect. They may not be large or tall, but if they are healthy, dwarf, and have heads 6 to 8 inches in diameter, they will be exceedingly useful and attractive, and for many purposes indispensable. By starting the plants late it is seen their culture is greatly simplified, and the only structures necessary are a warm house in which to bloom them in winter, and plain frames or pits in which to grow them in summer.

My first essays in Poinsettia-growing were failures. I started my plants early, and could only grow them on under the shade of Vines, and hence their growth became weak and elongated. By starting later and

growing mostly in frames a fair share of success followed. I never had more useful and showy plants than the year in which I cut the plants down on May the 20th. They were cut hard in, and the plants stood in the vinery, to break; when pushed half an inch they were shaken out and repotted, and kept in the vinery a week to assist them to become re-established, and were placed in cold (now sun-warmed) frames on June 22nd.

On being shaken out the plants were potted in clean pots—that is important—a size smaller than those in which they had bloomed the previous year. The soil used was equal parts of loam, peat, and leaf mould, with a free admixture of silver sand. Towards the end of July the pots were filled with active roots and the plants were shifted into their blooming pots, using soil considerably richer by substituting cow manure for the leaf mould and diminishing the proportion of peat. In this final potting mixture lumpy charcoal was freely incorporated and the pots were well drained, for although Poinsettias require copious supplies of water, any approach to stagnancy must be avoided. The foliage will turn yellow and drop off either by drought or excessive wet; therefore both extremes must be provided against, as by losing their leaves the plants are robbed of half their beauty. In potting it is well not to fill the pots within $1\frac{1}{2}$ or 2 inches of the top; and then, when the bracts show, a top-dressing of cow manure can be given, which will increase their size and colour. The routine culture in frames is attention to air and watering. In bright weather water must be used freely to supply the loss by transpiration from the large leaves. In the afternoon, at closing time, the plants should be freely sprinkled overhead. Always use tepid water. In sultry weather the removal of the lights at night is very beneficial. The plants so treated attained a height of 2 feet and perfected good heads. It is important that they be removed from the frames when the night temperature falls below 60°. Care must be taken that they are not placed suddenly in a dry atmosphere, or the foliage will inevitably turn yellow and decay. Any check to the roots by whatever cause is also a certain precursor of bad foliage, or none at all.

For dwarf plants I strike young shoots in summer. These small plants are after all the most useful. They may be had from 4 inches high to 1 foot, and are invaluable for many purposes of decoration. Propagation is also effected by the old wood somewhat after the manner of Vine eyes, but for dwarf healthy plants I have always found the striking of the young shoots the most satisfactory. The cuttings may be put in any time during the summer. If plants a foot high are wanted the end of July is a good time, and for very dwarf plants a month later will be a suitable time to take the cuttings. With due care and attention not one in twenty will fail to strike. The conditions are brisk heat, a close atmosphere, and, for a time, dense shade. For striking the cuttings a bottom heat of 90° is not too much. This may be afforded by fermenting manure, on which is placed close-fitting handlights or a frame—that is, in case no proper propagating house is at hand.

The cuttings should be selected from stout short-jointed shoots and be inserted singly in thumb pots, using light soil surfaced with pure sand. They should be laid for half an hour, or less, to dry the wound previous to being put in. For the first few days they must be densely shaded, gradually inuring them to the light. In ten days the young roots will protrude through the pots, and the plants can, after being duly prepared, be shifted into their blooming pots, having one or several plants in a pot as desired. These cuttings if well managed will not lose a single leaf, and the bracts they produce will be as fine as if the cuttings had not been severed from the plants. Long-jointed sappy growth will not strike, but select those shoots with the leaves near together, and take them off at a time when the stems have attained a dark green and become mature, and they will strike freely. Indeed few will fail.

Thus with plain homely materials and starting late may a supply of these attractive plants be had. So long as a properly heated structure is provided in which they can bloom their summer culture need not be a source of trouble. Cold frames transformed into miniature stoves by conserving the sun heat, and cuttings of the young shoots being put in in the growing season, will result in a stock of admirable plants to brighten up the dark winter months. The glowing heads will last for weeks either on the plants or cut and inserted in moist sand for using as cut flowers in rooms.—S. G.

CHELTENHAM SPRING SHOW.—MAY 6TH.

It is to be regretted that the Committee of the Cheltenham Society were not favoured with more propitious weather for their first show. Happily, there was no rainfall to add to the discomfort of visitors to the Montpellier Gardens, but a cold biting wind, combined with damp grass, was quite sufficient to rob the occasion of much of its usual pleasure. Considering the condition of the weather, the Committee may be congratulated on the large number of persons who patronised the Show, and it was abundantly made clear that the love of floriculture in Cheltenham is not on the wane. Nobody could have entered the three large marquees and gazed upon the magnificent display of flowers without recognising that the Show was one of the best of its kind yet held in Cheltenham. The May Show is always famous for Azaleas and Orchids, but as the years roll by growers of these choice flowers seem to vie with each other in producing specimens surpassing those of the past. For Orchids, Sir A. Ramsay, Bart., ran Mr. Neville Wyatt very hard. The competition for Azaleas was also good, and Mr. James of Norwood is to be congratulated on his endeavour to wrest the palm from the veteran Mr. Cypher. A prominent feature of the Show was the magnificent collection of cut Roses exhibited by Messrs. Heath & Son. Sir A. Ramsay was a good second in this class. For Roses in pots Mr. J. F. Mould was successful. In the centre tent the principal object of attraction was a basket of flowers arranged with much skill by Mr. Cypher; under the same canvas were the vases of cut flowers, in which class Miss Cypher is invariably

successful. The classes for Cinerarias, Pelargoniums, and Calceolarias, whilst not attracting many competitors, embraced exhibits of unusual beauty. The season, of course, is too early to allow of a large show of fruit or vegetables, but the exhibits on view were good. The Rev. G. Coventry's Strawberries were very fine, and his collection of vegetables was entitled to the honour bestowed on it. This gentleman was successful in many classes, and Mr. James, his gardener, is entitled to praise for his contributions towards the Show. The band of the Scots Guards occupied the kiosk, and played a popular selection of music. Messrs. Arthur Clare and Bridgewater divided the duties incident to the secretariat of the Society, and they have reason to feel gratified with the result of the first show held under their immediate supervision.

The principal exhibitors in the plant classes were as follows:—Mr. J. Cypher; Mr. H. James, Upper Norwood; Mr. J. F. Mould, Pewsey, Wilts; G. N. Wyatt, Esq. (gardener, Mr. Simcoe); Capt. Tickell (gardener, Mr. G. Powell); Sir Alexander Ramsay, Bart.; J. Gale, Esq. (gardener, Mr. Henry Luker); H. Chapman, Esq. (gardener, Mr. H. Sparkes); Mr. Enos Smith, Pittville; Mr. F. Perry, Shirehampton; Messrs. Heath & Son; H. Chapman, Esq.; Hugh Hamilton, Esq. (gardener, Mr. F. Moorman), Mrs. Gillilan (gardener, Mr. Mansfield), and T. P. W. Butt, Esq. (gardener, Mr. Hunt).

ROYAL BOTANIC SOCIETY.

SUMMER SHOW.—MAY 20TH.

THE weather was very unfavourable for this important Exhibition, and during the greater portion of the morning it was raining heavily. Fortunately, however, this ceased for a time early in the afternoon, though it continued dull. The large marquee devoted to the summer shows at Regent's Park was well filled with plants, which were as usual most tastefully and effectively arranged, the Azaleas and stove and greenhouse plants imparting much richness of colour to the display. Clematises and Roses were also strong features, and together with the miscellaneous groups rendered the Exhibition extremely varied and beautiful. The competition in all the principal classes was keen, but in a few cases some very small specimens were entered quite unfitting a Show of this character, and it would have been well had the prizes been withheld.

STOVE AND GREENHOUSE PLANTS.—The grand specimens from Mr. Cypher formed the leading feature in these classes, and his success was well merited, all the plants being extremely fresh and well grown. The pure White Azalea Magnificent fully deserved its name, and amongst others were remarkably fine examples of *Pimelea spectabilis* and *P. Hendersoni*, covered with their globular heads of white and pink flowers. *Erica Cavendishiana* was also uncommonly handsome in this collection. Mr. James had some extremely well-grown plants, *Erica ventricosa magnifica*, of globular form and nearly 6 feet in diameter, being one of the finest specimens in the Show; *E. ventricosa coccinea minor*, *Statice profusa*, and *Aphelexis macrantha purpurea*, being also of commendable merit. Mr. Chapman's ten plants were all large and healthy, the majority being profusely flowered, especially *Tremandra ericæfolia*, a very neat *Acrophyllum venosum*, *Chorozema Chandleri*, 5 feet in diameter, *Ixora Dixiana*, loaded with large trusses of orange-scarlet flowers, and *Anthurum Schertzerianum*, with about fifty fine spathes. In his collection of six were *Dracophyllum gracile*, of globular form, 5 feet in diameter, *Aphelexis grandiflora*, very handsome, and *Tremandra ericæfolia*, well flowered.

The prizes were as awarded as follows:—Twelve plants (nurserymen).—First, Mr. J. Cypher, Cheltenham; second, Mr. A. James, Lower Norwood; third, Mr. J. F. Mould, Pewsey, Wilts. Ten plants (amateurs).—First, Mr. Chapman, gardener to Lady Louisa Goldsmid, Regent's Park. Six plants (amateurs).—First, Mr. Chapman; second, Mr. Rann, Handcross Park Gardens, Crawley; third, Mr. R. Butler, Regent's Park. Six plants (nurserymen).—First, Mr. J. Cypher; second, Mr. H. James; third, Mr. E. Tudgey, Waltham Cross.

ORCHIDS.—A beautiful group was formed of these plants, but the competition was not quite so keen as is usually the case, and amateurs were poorly represented. Mr. Cypher carried off the leading prizes in the nurserymen's class with healthy, freely flowered specimens, of which the following were especially notable:—*Oncidium Marshallianum*, with two large panicles; *Oncidium sphacelatum*, with profusion of flowers; *Dendrobium chrysotoxum*, with fifteen spikes of flowers; *Cypripedium Lawrenceanum*, very fine; *Dendrobium thyrsiflorum*, bearing about thirty spikes; *Cattleya Mossiæ*, with three dozen blooms; and *Cattleya Skinneri*, very bright. Mr. H. James showed several fine *Cattleyas*, *Lælias*, *Masdevallias*, *Cypripediums*, and *Vandas*, a large *Anguloa Clowesi* with a dozen flowers being very noteworthy. Messrs. Jackson & Son also had two pretty collections. Mr. Catt had the only amateur's collection, which comprised a fine *Lælia purpurata*, with two dozen flowers; *Dendrobium thyrsiflorum*, with fourteen spikes; *Cattleya Skinneri*; *Phalænopsis Luddemanniana* and *Vanda Dennisoniana*, with three spikes. It was surprising that there were no exhibitors in the amateurs' class for single specimens, and it is to be regretted that only one amateur entered in the other class. The prizes were awarded as follows:—Twelve Orchids (amateurs).—First, Mr. H. E. Catt, gardener to W. Cobb, Esq., Sydenham. Twelve Orchids (nurserymen).—First, Mr. J. Cypher; second, Mr. H. James; third, Messrs. T. Jackson and Son, Kingston. Twelve Orchids, one plant only in each pot (nurserymen).—First, Mr. J. Cypher; second, Mr. H. James; third, Messrs. T. Jackson and Son.

ROSES.—Very handsome groups of these were entered, and the large specimens from Messrs. Paul & Son were in capital condition, especially the magnificent Charles Lawson, which is about 8 feet in diameter, and had over 100 large handsome blooms, *Celine Forestier*, *Beauty of Waltham*, and *Centifolia rosea* being good, but the latter with *Edouard Morren* were scarcely at their best. Handsome vigorous little plants were those from Slough, the majority having substantial highly coloured blooms, many of which were fit for the exhibition board. Especially notable were *Miss Hassard*, *Juno*, *Edouard Morren*, *Celine Forestier*, *Mons. E. Y. Teas*, and *Comtesse de Serenye*. Messrs. Paul & Son's small plants were also admirably flowered, and the contest was a keen one between these two exhibitors for the premier prize. Messrs. Mould and Rumsey contributed well, their plants being vigorous and clean with good blooms.

The prizes were awarded as follows:—Nine Roses (nurserymen).—First Messrs. Paul & Son, Cheshunt; second Messrs. G. Jackman & Son, Woking; third Mr. Mould. Six Roses (amateurs).—First Mr. P. Perry, Cheshunt; second Mr. J. Tranter, Henley-on-Thames. Twenty Roses, not less than ten varieties, in 9-inch pots (open).—Mr. C. Turner, Slough; Messrs. Paul and Son; Mr. W. Rumsey, Waltham Cross.

AZALEAS.—As regards size and floriferousness the six Azaleas from Mr. Roach were the best in the Exhibition. They were of globular or pyramidal form, 6 feet high, nearly as much across at the base, and covered with flowers. The principal varieties were Criterion, Model, concinnum elegans, Duc de Nassau, very fine, and Souvenir de Prince Albert. Mr. C. Turner's smaller plants were very bright, and formed a pretty group, representing a number of effective varieties—Cordon Bleu, M. Thibaut, Reine de Portugal, double white; Comtesse de Flandres, Grandis, and Charmer were very notable.

The prizes were awarded as follows: Six Azaleas (amateurs).—First, Mr. G. Roach, The Hoo, Sydenham; second, Mr. G. Wheeler. Six Azaleas (nurserymen).—First, Mr. C. Turner, Slough; second, Mr. Henry James; third, Mr. T. F. Mould. Twelve Azaleas, not less than six varieties in 12-inch pots (open).—First, Mr. C. Turner; second, Mr. Roach; third, Mr. Eason, Hope Cottage, Highgate. Six Azaleas in 12-inch pots (amateurs).—First, Mr. G. Roach; second, Mr. Eason; third, Mr. G. Wheeler.

HEATHS.—A pretty half-dozen plants were shown by Mr. Cypher, which, like all the specimens exhibited by him, were distinguished by a most pleasing freshness—*Erica ventricosa magnifica*, *E. Cavendishiana*, *E. depressa*, and *E. Lindleyana* were the best. Mr. Tudgey followed closely, showing *Erica affinis*, *E. Victorice*, and *E. Lindleyana* in capital form. The prizes were awarded as follows:—First, Mr. Cypher; second, Mr. E. Tudgey; third, Messrs. J. Jackson & Son, Kingston.

PELARGONIUMS.—Both with Show and Fancy varieties the Slough plants were easily first, and were much superior to the other exhibits. The most handsome Show varieties were Illuminator, Kingston Beauty, Maid of Honour, and Claribel. Of the Fancies Ellen Beck, Princess Teck, East Lynne, and Mrs. Porter were the finest. Of the amateurs Mr. Hill's plants were the best, but they were not fully out, and would have been better a few days later. The prizes were awarded in the following order:—Six plants in 8-inch pots (amateurs).—First Mr. Hill, gardener to H. Little, Esq., Hillingdon. Second Mr. Wiggins, gardener to W. Clay, Esq., Kingston. (Nurserymen).—First Mr. C. Turner; second Mr. J. Cypher. Six Fancy varieties.—First Mr. C. Turner; third Mr. Wiggins, gardener to W. Clay, Esq., Kingston.

CLEMATIS.—The customary beautiful collection from Messrs. G. Jackson and Son, Woking, gained them the premier prize in the class for twelve Clematises. These grand specimens 5 to 6 feet high, of globular form, constituted a most imposing group at one corner of the marquee, and was greatly admired. Especially noteworthy were the following varieties:—Fairy Queen, with flowers 9 to 10 inches in diameter, white with a pink central stripe; Imperatrice Eugenie, white, very handsome, blue gem, purplish blue, Jeanne d'Arc, bluish white; Lady Caroline Nevill, mauve with a purple stripe; purpurea elegans, deep purple; and Grand Duchess, flesh white, very large. The only doubles were Beauty of Woking, pale mauve, and Duchess of Edinburgh, white.

FINE-FOLIAGE PLANTS.—Several collections of these were shown, but much the finest were those in the nurserymen's class. The best of Mr. Cypher's specimens were *Kentia australis*, 12 feet high, *Cycas revoluta*, very large, *Croton Queen Victoria*, finely coloured, and *Dasyliiron acrotrichum* healthy and well developed. Mr. E. Tudgey contributed some large specimens, *Pritchardia pacifica* being of gigantic proportions, and *Kentia australis* was also handsome. The prizes were awarded as follows:—Six plants (Amateurs).—Second, Mr. R. Butler, gardener to H. H. Gibbs, Esq., Regent's Park. (Nurserymen).—First, Mr. J. Cypher; second, Mr. E. Tudgey; third, Mr. H. James.

FERNS made a small display, but they served to fill a recess in the marquee. Mr. Butler had *Adiantum formosum* and *Lomaria gibba major* in good condition, and Mr. Wheeler showed *Asplenium bulbiferum* and *Microlepia hirta cristata* fresh and healthy. The prizes were awarded in the order named.

Two collections of Alpine plants were staged, Messrs. J. Carter & Co., High Holborn, and Paul & Son, Cheshunt, taking the prizes in that order. Mr. Eason was the only exhibitor of Gloxinias, and gained the first prize, with well-flowered plants.

MISCELLANEOUS GROUPS.—Messrs. Wm. Paul & Son, Waltham Cross, contributed two magnificent semicircular groups of Roses in pots, which had a most imposing effect near the entrance to the large marquee. About eighty compact bush specimens were staged, and all of them were flowering most freely, the blooms substantial and bright in colour. Sixteen boxes of Rose blooms were also sent by the same firm, and the silver-gilt medal awarded was a fitting recognition of one of the most important and beautiful exhibits in the Show. A choice and handsome group of Orchids, Azaleas, Anthuriums, Heaths, and miscellaneous fine-foliage plants was contributed by Mr. B. S. Williams, Upper Holloway (large silver medal). Messrs. E. G. Henderson & Son, Pine Apple Nursery, W., exhibited a fine collection of Palms and foliage plants, very tastefully arranged (silver medal). Messrs. W. Cutbush & Son, Highgate, had a handsome group of Azaleas, Boronias, and greenhouse plants, with a suitable proportion of Palms, Araucarias, and Ferns (small silver medal). Messrs. John Laing and Co., Forest Hill, had a very handsome group of Tuberous Begonias, Caladiums, Heaths, Ferns, and fine-foliage plants (silver medal).

Messrs. J. Veitch & Sons, Chelsea, exhibited a choice selection of new plants, many of which were certificated. A number of varieties of Turban Ranunculus and hardy plants were also shown from Chelsea (large bronze medal). Messrs. Barr & Son, Covent Garden, had an extensive collection of Narcissi Ixias, Tulips, and hardy flowers (large bronze medal). Mr. W. Howard, Isleworth, showed a group of Calceolarias. Messrs. Paul & Son, Cheshunt, contributed a large group of hardy flowers, comprising many rarities (small silver medal). Messrs. Hugh Low & Co., Upper Clapton, showed a choice group of Orchids, chiefly Cattleyas, Dendrobium, and Cypripedium (large bronze medal). Messrs. J. Vander Bros., Tooting, had a collection of hardy plants (large bronze medal). Mr. W. Rumsey, Waltham Cross, showed six boxes of Rose blooms, very bright and varied (large bronze medal). Mr. H. B. May, Edmonton, had a group of Calceolarias, very dwarf and brightly coloured (large bronze medal). Flowers of *Aristolochia*

gigantea were sent by Lady Theodora Guest, Enwood House, Hensbridge, Blandford.

The weather necessarily deterred many from visiting the Show, yet there was a much better attendance during the afternoon than could have been expected under the circumstances.



HARDY FRUIT GARDEN.

As the fruit of Apricots becomes thinned sufficiently nip off the breast-wood to two or three buds, thin and tie-in side shoots. The fruit of Peaches and Nectarines is now set and swelling fast; disbudding may therefore be done, for there is so little leaf-blister that for once we are able to thin the young growth thoroughly, and only to leave enough shoots, say two or three upon each fruiting branch, to furnish the trees with fruiting wood for next year. This is a matter for congratulation. Freedom from blister giving us a strong spring growth, robust, well ripened by autumn, with plenty of triple buds to afford a full crop of fine fruit next year; but when the growth is crippled by blister it makes no real progress till midsummer, and this loss of a month or two frequently leaves the growth weak and immature at the end of the season. Avoid crowding young growth, and you will do so if only the requisite number of shoots are left for fruiting wood, leaders to fill blank spaces, and for new main branches from the base of the tree. The new side growth of Red and White Currants on walls has been nipped off to two or three leaves and the leading shoots tied in, as they are very liable to be broken off by heavy rain and wind. Pear trees on walls are growing freely, but we shall adhere to our rule of leaving the growth untouched till the fruit is set and is swelling freely, then the whole of the young spur growth will be stopped, and only leading shoots retained where there is space for farther extension.

We have seen alarming reports of damage done to the fruit crop by late frosts, but so far as our observation goes—and it extends over several counties—we have not met with a single instance of serious harm so far. Cherries are setting well, even Belle d'Orleans has an abundant crop well set upon a huge pyramid having very little shelter. We make special mention of this pleasing fact, because the blossom of this valuable early sort so frequently suffers from frost that a full crop of fruit is seldom seen upon a tree away from a wall. Figs on walls have plenty of swelling fruits, each shoot having from three to five fruits near the tip, the bright green healthy appearance of the fruit being a sure indication that it will not fall off prematurely. Plums and Pears are setting thickly—many of the Pears so thickly that thinning will have to be done. Do not, however, let this be premature, but wait till the natural thinning is over, and then remove enough fruit to ensure a full development of the remainder. Apple blossom is very beautiful just now, and it is so abundant that we may reasonably look for a full crop of fruit. Bush fruits in low cold situations have doubtless suffered somewhat, but generally it has escaped material harm, and where a little dried fern was shaken over the tops of the bushes the crop is safe. We have seen a few Strawberry flowers with the centres blackened by frost; but we by no means agree with the croakers that the Strawberry crop will prove a failure because of this.

FRUIT FORCING.

FIGS.—Early forced Trees.—When the fruit begins swelling for ripening a higher and drier temperature will hasten the process, but care must be taken to give plentiful supplies of tepid liquid manure to the roots and to syringe the foliage regularly, as any sudden check will prove injurious to the crop. As the fruits ripen it is well not to wet them if it can be avoided; indeed, it is not necessary, as atmospheric moisture can always be secured by keeping the mulching, walls, and paths properly moistened. When grown in a hot dry house the Fig soon becomes infested with red spider and scale, and as a natural consequence the fruiting period is shortened, the trees are rested because their strength is exhausted, and the second crop is poor, rusty, and stunted—altogether unsatisfactory; but if supplied liberally with liquid manure, ventilated freely with heat, and syringed as often as they are divested of ripe fruit, they become perpetual bearers. To have a Fig tree in continual bearing it must be kept constantly growing, and for that reason the extension rod system is the most suitable, as the leading shoots are allowed to advance without stopping until they reach the extremity of the trellis, when they are cut away at the winter pruning, thinning to make room for others.

Figs in Unheated Houses.—Numbers of fruits are showing; indeed, Figs under glass always show fruit under favourable conditions in abundance, and in the case of a favourable season give an abundance of very fine fruit in late August and through September. The trees having the roots inside and confined to reasonable limits, the border being concreted and thoroughly drained with broken bricks and old lime rubbish, they will thrive surprisingly, and under ordinary treatment they will be highly satisfactory. In cloudy weather, instead of syringing twice a day the afternoon syringing may be dispensed with, and in bright weather it may be performed early with all the solar heat that can be shut in to insure the proper drying of the foliage before nightfall. In training the young growths in these structures a good distance should be allowed between them, as overcrowding impedes the free access of light and air, so essential

to the ripening of the wood and fruit. Avoid close stopping, as it causes a number of late growths to emanate which do not get properly ripened before the leaves fall. It is the safest plan to secure sturdy short-jointed wood, and to allow the points of the shoots to grow up to the glass, in which position they will form an abundance of embryo fruit ready to swell with the first continued warmth in spring.

FINES.—Sunshine must be utilised to the fullest extent, as under such conditions the growth in the plants may be advanced more expeditiously without fear of harm, provided proper care be bestowed upon the ventilation, which, whenever there is a prospect of a sunny day, should be attended to early in the morning, because we cannot have too much within the houses subject to its being dispelled from the surface of the leaves before powerful sunshine operates fully upon them. In order to maintain a good moisture freely sprinkle all available surfaces about the house whenever they become dry, and especially is this required prior to closing, which must be sufficiently early in the afternoon to keep the temperature at 85° or 90° for some time afterwards. When the weather is dry syringing will be needed almost daily, which, however, must be regulated by the condition and character of the house and plants; the best criterion as regards the plants being to keep them with more water in the axils of the leaves, as many feeding roots exist around the stems of the plants, which only derive support from this source. Be careful not to let any plants at this, the growing season, suffer through an insufficient supply of water, and in all cases of its application let it contain some stimulant, taking care not to give it too strong, and always in a tepid state. See that the requisite attention is given to shading. The thinner the material, if only it is efficient, the better, as all that is wanted is to prevent scorching the leaves or fruit, and only employ it when the sun is powerful. Employ no more fire heat than is absolutely necessary to maintain the temperature in the fruiting department at 70° to 75°, and 65° in successional structures, with a rise of a few degrees by artificial means in the daytime.

PLANT HOUSES.

Tree Mignonette.—Few plants are more admired during the winter and spring than Mignonette, especially when grown as low standards with stems from 1 to 2 feet in length, and heads 18 inches or a little more across. At one time we used to sow seed for the earliest batch of these plants in March, but early sowing is a great mistake, and now we sow the seed about the 1st of May for plants to commence flowering during the month of November. For later and spring flowering another batch is sown towards the end of the month. The secret of success in the production of fine heads covered with large spikes of bloom is in growing the plants from their earliest stage without a check. They must be constantly growing and their leading shoots soft, for if once checked they become woody; progress afterwards is slow, and poor flowers result if ever the plants manage to make heads. Miles' Hybrid Spiral we have found the best for this purpose, and three or four seeds are sown in the centre of 2½-inch pots, crocked lightly, and filled rather firmly with fibry loam three parts, and one part of leaf mould, sand, and a very small percentage of cow manure passed through a fine sieve. The seeds should be just covered, then watered and stood in a temperature of 60°. As soon as the seedlings are large enough the best and most promising are selected, and the remainder pulled out. The plants are allowed to remain in this temperature until they are nearly 2 inches high, when they should be supplied with a small stake and removed into 5-inch pots, for the small ones will be sufficiently full of roots. The same compost should be used, and the plants placed close to the glass, not on a shelf, in a little lower temperature, which should be gradually lowered until artificial heat can be dispensed with. Ventilate daily after the seedlings are up to insure sturdy growth.

Standard Heliotropes.—These are very useful during the autumn and winter months, and continue to flower for a long time if kept in a suitable temperature. It is a mistake to retain plants from year to year for this purpose, for they never grow or flower with the same freedom as those raised from cuttings and grown into the desired size in one season. The variety known as White Lady is very good, and flowers freely during the winter. Strong cuttings should be inserted at once singly in small pots, and then grown and potted until they are in the size in which they are to flower, 8 and 10-inch pots being suitable. Grow the young plants without being stopped, removing all side shoots directly they appear, until the desired height of stem has been attained, when the leader may be pinched to induce the formation of the head. The plants, if properly attended to, will have received their last shift by the time the stem is formed, and the only attention needed after is watering, stopping, and regulating the shoots. The plants can be grown outside during the summer. No trellis is needed the same as required for Mignonette. The shoots can be drawn downwards by means of a little matting secured to the stake supporting the stem. These plants do well in good loam with a little manure and sand. Some leaf mould may with advantage be used in the compost for the first potting or two.

Tree Carnations.—Cuttings strike rapidly if strong and taken from plants in a cool airy structure. If they have been in a confined atmosphere the cuttings will fail. At this season of the year they should be inserted singly in small pots and kept perfectly close under handlights or bellglasses in a temperature of 60° to 65° until they are rooted, when they must be gradually hardened to cooler treatment. The cuttings must be shaded from the sun, and if inserted now they will make good flowering plants by winter. The batch inserted in 5 or 6-inch pots some time ago were subsequently placed singly into thumb pots, which are now full of roots. Our plants are in this condition, and a slight ho bed is being made in a

cold frame for the purpose of hardening them without giving a check. As soon as the hed is ready the plants will be transferred into 4-inch pots and stood upon the surface of the bed. The gentle heat will encourage root activity, and by the admission of air daily on favourable occasions a stout sturdy growth will be the result.

Roses.—For autumn flowering under glass a batch of Tea varieties should be rooted at once and grown under glass during the summer months. For early spring flowering insert a good batch of the old Gloire de Dijon, growing the plants afterwards in 6-inch and 8-inch pots. Cuttings made from half-ripened wood root freely at this season of the year if inserted in sandy soil and kept perfectly close under handlights or bellglasses in a temperature of 65°. Two joints are sufficient for a cutting; a good watering after insertion should be given, and the cuttings shaded from the sun.

THE BEE-KEEPER.

PREPARING HIVES FOR SUPERING.

FROM many districts comes the gratifying news of the advanced state of hives. Very few of them have been fed or required it. This not only gives substantial proof that our system of never feeding unless the bees require it is the right one, but also supports my teaching that hives heavily provisioned and containing plenty of bees and left undisturbed from September until now are in every case the ones likely to give satisfaction. The forward state of hives this year can in no way be attributed to a fine season, because we have never had a more untoward one for upwards of forty years, but it is due solely to the effects of the splendid autumn of last year, a direct case of cause and effect which bee-keepers should take a note of and compare it with seasons less favourable in the preceding or subsequent years.

Swarming has already commenced in many places throughout Scotland. Some may think this too early, but with us May swarms have always been the most profitable. The great object, if we wish to keep our bees profitably, is to note the age and fertility of the queens. By attending carefully to this I have always young queens at the head of stocks. It is the most justifiable manipulation that can be performed in the apiary outside the removing of all surplus honey.

From the earliness of many swarms this season there will be a good chance of getting supers from the blossoms of the Apple, Pear, and Plane tree. Supers can often be obtained from hives that are crowded with bees, but are otherwise too small, and although such supers are often prized by some, it is not commendable to do so. Confining bees to less space than they necessarily require to obtain a super simply means frustrating the natural attempts of the bees, and limits their production of honey to pounds what might have been stones had the hive been large enough to have allowed the queen to have developed her laying powers. Rather perhaps I say, had the brood nest been large enough for the egg-laying power of the queen, which eggs so laid would have been hatched, the larvæ nursed, and subsequently the young bees would appear in greater ratio than where it is too small, and the thousands of surplus eggs are destroyed by the bees.

In every case where brood extends to the outside of the comb, or where the queen ascends to the super and lays eggs there, the stock hive is too small, and the bee-keeper allowing such to exist is not looking to his interest. Nor is the egg-eating or brood in a super the only danger. In many cases where the queen is hampered for room to deposit her eggs she is deposed and the other evils follow. There is even worse than this—namely, when hives that are too small to allow sufficient comb for honey, pollen, and water to last the bees for some weeks in addition to that required for the eggs and grubs. Where stimulative feeding is the only resource the bees have to carry on the internal economy of the hive, a day's neglect or a few bleak days will set the bees to egg-eating and grub-drawing, which will render the hive useless for the season. Those who wish to be successful should

bear these things in mind—viz., never have less than two months' provender in the hive at this season, and in September never less than what will last them for eight or nine months, and never have a hive less in size than what will contain from 50,000 to 60,000 eggs and grubs with a third more combs for stores.

When a hive is not of sufficient size means should be taken to enlarge it. When hives are not constructed for enlargement the simplest means is to prepare a super with bars $1\frac{1}{2}$ inch from centre, same width as for breeding, and place it on the top of the hive. Over this when it is full the ordinary supers may be placed. This intermediate super with $1\frac{1}{2}$ inch bars if large enough will effectually prevent the queen entering the super proper and encourage the bees to enter them more readily, if the side combs are not filled with honey and sealed, as is likely to be the case in the stock hive. When this occurs the bee-keeper should either remove the sealed comb or break the seals, as bees dislike to travel over sealed honey to enter supers.

Notwithstanding the rage for extracted honey, super honey, whether in the comb or drift, will always be most sought after, and will be in demand when extracted and "artificially ripened" honey is a drug in the market, though at a price sufficiently low and suitable to the wishes of the so-called friends of the poor bee-keeper, who no doubt may for a while persevere under difficulties and sell their honey at jam price, but assuredly will sooner or later give up the business in disgust, or turn their attention to producing a genuine first-class article which will find a ready sale at a remunerative price if sold direct to the consumer. There must, however, be some exertion exercised by the bee-keeper both as to that as well as to the production of first-class super honey if he wishes to be successful.

Any little extra labour towards these attainments should not be grudged, but every effort should be made to obtain samples which please both the eye and the taste.

If hives are properly managed there need not be much or any honey taken from combs that have been bred in or from those where pollen has been stored—both taint the honey, although the advocates of the extractor encourage the extracting from brood combs or those that have been bred in, because they find white comb too brittle. To produce a marketable sample of extracted honey extract only at the end of the sealed combs—the only way the extractor can be used to give satisfaction to the consumer.—A LANARKSHIRE BEE-KEEPER.

ERICA HERBACEA CARNEA AS A HONEY PLANT.—In a recent visit to the Upton Nurseries, Chester, I noticed amongst early-flowering plants none more beautiful than Erica herbacea carnea and its pure white variety. These come into flower when scarcely anything else is to be found out of doors. They are grand bee plants. However early in flower, they are sure to be visited by these industrious workers.—JOHN EDMUNDS.



TO CORRESPONDENTS

* * * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

To Correspondents and Readers.—We have from time to time received specimens of wood, insects, and flowers with no letters referring to them or indicating the senders. Such parcels of course could not be attended to. In consequence of the great pressure of matter this week we are compelled to defer the publication of a report of the Bath Show, and interesting articles on various topics.

Microscopes (J. S. U.).—Write to Messrs. Lejune & Perkins, opticians Hutton Garden, London. The prices vary extremely, according to the character of the articles.

Laced Polyanthuses (J. T. C.).—As border varieties they are as good as it is usual to find flowers raised from seed, but they lack the properties desired by florists, and are hence not good enough to be endorsed with varietal names.

Planting Flower Beds (R. W.).—Your letter is so crowded and confused that it is almost impossible to read it and fully comprehend the case. So far as we can make out the proposed arrangement we do not see how you can materially improve it with the plants named. We do not like the mass of yellow in the centre, and a small inside circle of Ageratum or even Perilla would improve the appearance of the design.

Aphides on Peach Trees (E. D. O.).—We should try light fumigations on three consecutive nights, as a strong volume of tobacco smoke is injurious to the foliage of Peach trees, often causing a shrinkage of the tissue, portions falling away, leaving only the veins. Some methods of destroying aphides are indicated in an article on the first page, and you can adopt the most convenient, either instead of or in addition to fumigating.

Vine Leaf Scorched (Youth).—You certainly adopted a very youthful method of packing, in rolling up a leaf and crushing it into a letter, to be smashed and shrivelled in transit through the post. How could you suppose anyone could satisfactorily indicate the condition of the Vine from such a "specimen?" We can only say that the leaf appears to have been of good substance once, but it seems to have been scorched considerably by some error in ventilation.

Crickets Eating Vine Leaves (R. R.).—Place some phosphor paste, which may be had of any chemist, on pieces of slate in the evening near their haunts, removing what is not eaten in the morning and burn it. It may be necessary to repeat the bait, and we have sometimes laid baits of oatmeal mixed with butter or lard to the consistency of paste, and after they had feasted on this for a night or two substituted phosphor paste. Being poison it must be used with care, and kept from the reach of domesticated animals.

Vines Lifted (J. C.).—We do not think you acted wrong in lifting the Vine roots, as the Grapes shrank badly. The only thing wrong was in covering the border thickly with cow dung, which we think is the cause of the mischief, as it would keep the soil wet and cold. Some dry fern or litter would have been better. We should remove the cow dung down to the surface of the border, though a little may be left as a mulching, and we think that the Vines will yet start into growth freely when the soil becomes warmed by the sun heat, and root-action consequently takes place. In the meanwhile keep the Vines syringed two or three times a day, and encourage growth as much as possible.

Insects in Vine Border (G. T.).—If the few dried specks in the letter are the insects to which you refer, they are shrivelled beyond the possibility of identification. They should have been enclosed in a leaf to keep them fresh. We do not for a moment think they are Phylloxera, and should give the border a good soaking with clear lime water; this would be more likely to benefit than injure the Vines, and might be destructive to the insects. Lumps of unslaked lime are requisite for placing in water, and if, after stirring and allowing the water to become clear, there is a sediment at the bottom of the tub or vessel, the lime water is as strong as it can be made; if there is no sediment it is not strong enough.

Vines Scorched (W. H. J.).—The leaves are scorched, and there is evidence of red spider on the smaller leaf. The texture of the leaves is thin—proof that the house has been kept much too close, and to this cause alone we attribute the scorching. We should have the ventilators open slightly and constantly—just a chink at the top all night, so as to cause a circulation of air and prevent a close vitiated atmosphere, increasing it early in the morning and through the early part of the day as the sun gains power, then when the temperature declines reducing it gradually, closing at 80° with plenty of moisture in the house. Cease syringing the Vines, but maintain a good moisture by damping available surfaces in the morning, and especially at closing time. Keep the roots well supplied with tepid liquid manure, and some sprinkled on the paths, borders, &c., towards evening will invigorate the Vines and keep down red spider. Allow the laterals to extend as far as space permits, yet be careful to avoid overcrowding, especially of the principal foliage.

Vine Bunches Shrivelling (C. M.).—The cause of this is unripe wood, or the buds not being perfectly developed in the previous autumn. It may have arisen from a deficiency of water during the season of growth or through its being withdrawn too soon in autumn, or it may be a consequence of the growths being crowded, the principal leaves not having had full exposure to light and air, and it may have resulted from the foliage falling prematurely from an attack of red spider. We think, however, that it arises from the wood being unripe, and if you avoid that we think they will prove satisfactory another season. The dull weather would not be likely to cause the defect. Maintain a rather dry and warm atmosphere by day, and allow the temperature to fall to 65° or even 60° on cold nights.

Arranging Flower Beds (A Lady Gardener).—Yellow Calceolaria is not a good centre, but we think it will grow quite tall enough for the pink Pelargonium, which we presume is Christine or a similar variety. Vesuvius next the pink is no contrast, though it would harmonise. We should have a centre of Perilla nankinensis 1 foot across, then a line a foot wide of yellow Calceolaria, next pink Pelargonium, then a line of Bijou Silver Variegated Pelargonium with the flowers removed, then Vesuvius Pelargonium, a 6-inch line of Lobelia, and a 6-inch margin of Cerastium. You would probably like this arrangement for a season. For the centre of a bed almost any of the Dracaenas would do, only harden them well off before

planting out, which ought not to be done before the middle of June. *D. terminalis* is better for the purpose than *D. Cooperi*.

Flower Bed Planting (Merchant).—You do not state what you have for the centre of the bed, but we may suggest that it should be scarlet Pelargonium. 1 and 4, Happy Thought Pelargonium; 2 and 5, Mrs. Pollock Pelargonium; 3 and 6, Flower of Spring Pelargonium; 7 and 10, purple Pansy, with a line all round of white Viola; 8 and 11, yellow Pansy, with a line around of blue Viola; 9 and 12, blue Pansy, with line around of yellow Viola; 13 and 16, blue Lobelia, dotted up the centre with Echeveria; 15 and 18, Cerastium, dotted Golden Feather; 14 and 17, Golden Feather Pyrethrum, dotted blue Lobelia. The bed may be edged with Echeverias or Cerastium. In dotting only use single plants, and allow sufficient space, so that the dots will show distinctly, the plants needing to be about a foot apart, more rather than less. The dots being intended to take off the ribbon character of the arrangement, and render it less tame.

Large Onions (A. Bennett).—The large Onions you have seen at the shows are usually grown under special treatment. Early in the winter the ground is heavily dressed with good solid farmyard or stable manure; it is then deeply dug or thrown up roughly, in order that it may become thoroughly pulverised during the winter. As early in the spring as the weather and state of the ground permits, the autumn-raised Tripolis are transplanted from the seed beds in rows about 15 inches apart, and the plants not less than 6 inches asunder in the rows. The seed of those of the White Spanish type, such as the Improved Banbury, Improved Reading, and Rousham Hero, is sown at the same time as the others are transplanted, and these mature where they are sown. In addition to the solid manure, about two surfacings of some kind of artificial manure are given, nothing being more effective than guano at the rate of about 3 ozs. to the square yard. This should be sown between the rows, preferably during showery weather, and be lightly stirred in with the Dutch hoe. Liquid manure of any kind or sewage is also given by some growers, and this is also best applied during showery weather, or before the ground has become very hard and dry. Neither water nor liquid manure should be given after the Onions are approaching maturity, or it will induce them to crack or become irregular in shape. It is too late to transplant your Tripolis, but you can thin them out freely and otherwise treat them as above outlined. Many of them will probably bolt, but the remainder, if liberally treated, may yet grow to a size fit for exhibition. All kinds of growing crops, and Onions in particular, are greatly benefited by having the ground about them frequently stirred, though not deeply, so as to disturb the roots. If your Vegetable Marrows are being grown in a frame without heat, or in the open and lightly protected, most probably they fail to set owing to the long prevalence of cold weather. Under glass we usually find it necessary to fertilise the early blossoms, much as we would Cucumbers and Melons. They remain open but a very short time, and have to be watched closely accordingly. Later on, when the plants are receiving plenty of room, light, and air, no artificial setting will be necessary.

Names of Fruit (Thinghill).—Moss's Incomparable.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (W. W.)—*Ornithogalum nutans*. (Subscriber).—The Orchid is *Maxillaria Harrisonia*, and the red flower *Bauera rubioides*. (A. Turner).—*Ribes aureum*. (F. N.)—1, *Reedia glaucescens*; 2, *Callicarpa purpurea*; 3, not recognisable; 4, *Maxillaria picta*; 5, *Paullinia thalictrifolia*; 6, *Abutilon vexillarium*. (W. A. B.)—Flowers sent for naming ought to be numbered. The white is *Saxifraga ceratophylla*, the small yellow *Alyssum saxatile*, purple *Lunaria biennis*. Please send information about the double primrose-coloured flower. Is it hardy or tender, shrubby or herbaceous? No stems or foliage accompanies it. What is the size of the Conifer of which you have sent a spray? (H. M.)—The plant sent is *Ornithogalum umbellatum*, and is popularly known as the Star of Bethlehem. *Ornithogalum nutans* has no special name. *Omphalodes* is called the Creeping Forget-me-not, and *amplexicaulis* means stem-clasping, referring to the leaves. (C. S.)—1, *Viburnum macrocephalum*; 2, *Calycanthus floridus*; 3, *Semprevivum ciliatum*; 4, *Raphiolepis ovata*; 5, *Alonsoa linifolia*; 6, *Prunus Padus*. (Reader).—*Pulmonaria officinalis*. (Harrison).—*Ixia amœna*.

COVENT GARDEN MARKET.—MAY 20TH.

MARKET heavily supplied with forced fruits, Grapes and Strawberries being cleared only at lower prices. Vegetables plentiful.

		FRUIT.			
		s. d.	s. d.	s. d.	s. d.
Apples	½ sieve	2 6	to 4 6	Oranges	100 4 0 to 7 0
Chestnuts	bushel	16 0	0 0	Peaches	per doz. 15 0 21 0
Cobs, Kent	per 100 lbs.	0 0	0 0	Pears, kitchen ..	dozen 1 0 3 0
Currants, Red ..	½ sieve	0 0	0 0	„ dessert	dozen 0 0 0 0
„ Black	½ sieve	0 0	0 0	Pine Apples English ..	lb. 2 0 3 0
Figs	dozen	4 0	6 0	Plums	½ sieve 0 0 0 0
Grapes	lb.	3 0	5 0	Strawberries	lb. 2 0 4 0
Lemons	case	10 0	15 0	St. Michael Pines ..	each 3 0 7 0

VEGETABLES.

		s. d.	s. d.	s. d.	s. d.
Artichokes	dozen	2 0	to 4 0	Lettuce	dozen 1 0 to 2 0
Asparagus	bundle	2 0	5 0	Mushrooms	punnet 0 0 1 4
Beans, Kidney ..	100	1 0	0 0	Mustard and Cress ..	punnet 0 2 0 0
Beet, Red	dozen	1 0	2 0	Onions	bunch 0 3 0 6
Broccoli	bundle	0 9	1 0	Parsley	dozen bunches 2 0 3 0
Brussels Sprouts ..	½ sieve	0 0	0 0	Parsnips	dozen 1 0 2 0
Cabbage	dozen	0 0	1 0	Potatoes	cwt. 4 0 5 0
Capsicums	100	1 6	2 0	„ Kidney	cwt. 4 0 5 0
Carrots	bunch	0 3	0 4	Rhubarb	bundle 0 4 0 0
Cauliflowers	dozen	2 0	3 0	Salsafy	bundle 1 0 0 0
Celery	bundle	1 6	2 0	Scorzoneria	bundle 1 6 0 0
Coleworts	dcz. bunches	2 0	4 0	Seakale	per basket 1 0 0 0
Cucumbers	each	0 3	0 6	Shallots	lb. 0 3 0 0
Endive	dozen	1 0	2 0	Spinach	bushel 2 0 4 0
Herbs	bunch	0 2	0 0	Tomatoes	lb. 0 0 0 0
Leeks	bunch	0 3	0 4	Turnips	bunch 0 4 0 0



DAIRY FARMING.
SPRING.

With the coming of spring the winter diet of the dairy cows, consisting of Carrots, Cabbages, Mangolds, bran, and hay, but no cake or Turnips, is changed—first to Thousand-headed Kale and Rye, then to Rye Grass, and now to meadow grass. As cow after cow calved, and the calves were weaned, and the fresh green food of spring came into use, the dairy produce improved every week; more and richer milk, with a proportionately increasing quantity of butter of that high colour and fine flavour which tells more than anything else can do that the cows are upon a full diet of sweet, tender, succulent food. It is our custom to have the milk of all the cows in full profit measured once a week, and to have a strict account kept in the dairy book under the following headings:—Cows in milk; Quarts daily; Milk used; Cream used; Butter made; Butter used; Butter sold. In the stock book there should also be entries of the name and age of each cow, date of entering the herd, time of first and subsequent calvings, an account of the calves and what becomes of them, whether they are reserved for store beasts or heifers for breeding, or if they are fattened and sold for veal, with the age at which they are sold and the prices obtained for them. It is only by close attention to such details that we can know all that is requisite about the herd and dairy. Once established as a rule of the farm it is seldom that there is any trouble about keeping correct entries, provided a little careful supervision is given occasionally, our rule being to have the books sent in for inspection every week.

Sex, breed, size, and condition at birth, and the age and character of the cow are all matters that exercise some influence upon our decision as to the fate of each calf, and that decision is arrived at quickly. A healthy well-formed cow calf from a really good dairy cow is always saved for trial as a heifer to calve when two years old, and although a full yield of milk is not given till the second calving, yet one is able to see at the first calving if a heifer is likely to be worth saving for the dairy herd or not. So, too, with bull calves. Big-framed sturdy animals at birth are generally worth keeping for twenty to twenty-four months, if our knowledge of the parentage enables us to feel assured that the young stock at that age will be ripe for the butcher; if not, there should be no hesitation about fattening them at once for veal. It never answers to keep inferior animals for store stock. At a large cattle market where many hundreds of cattle pass under the auctioneer's hammer weekly, we recently saw lot after lot of wean-year calves about ten months old sold at from £5 to £6 apiece. Now, fat calves eight to ten weeks old have sold readily at about £4 for veal, and one naturally inquires, not what is the profit, but rather what is the loss upon the older animals.

Calves reserved for store stock must be kept going from the first if they are to afford us that margin of profit which all farm produce must be made to yield by hook or crook. We must keep "calf flesh" on, and as Mr. Evershed tells us so clearly, "The progress in growth of flesh and fat accumulation must not only be unbroken but rapid;" a diet of milk for the first five or six months, crushed corn, cake and bran being given them as soon as they can eat it, and then grass, hay, Oat straw, and cut Turnips and Mangolds. "One great point is," says another practical man, "never to allow the stirks to lose their calf-lyre, and keep them steadily growing and improving. If this be done, there is not the slightest difficulty in bringing them out, on an average, 60 stone weight (of 14 lbs.) at twenty-two to twenty-four

months old in April and May. Many clever farmers never suffer the calves to run out on grass, but keep them in snug winter quarters, and in an enclosure in summer with a cool shed, where there is little worry or annoyance from flies. We give preference to a large shed so constructed as to afford all necessary shelter both in winter and summer, with a yard for exercise in winter and spring, and a small paddock of rich grasses and Clover for summer, due care being then taken to fasten the yard gate open so that the calves may always enjoy the shelter of the shed at will, and they are generally to be found in there during the extreme heat of the day.

Of the diseases of calves, navel-ill requires prompt attention. Fomentation and disinfection with tepid water and carbolic solution two or three times daily are the ordinary remedies, with a diet of milk and linseed gruel, and if there is constipation doses of castor oil must be given. Should the disease apparently require more than ordinary remedies, at once call in the veterinary surgeon. Indigestion followed by diarrhoea is often brought about by the foolish custom of only allowing a young calf two meals daily—the first in the morning and the other in the evening, so that the tender animal has to bear the severe strain of long fasts and rapid gorging, to which it not unfrequently succumbs, and when inflammation of the bowels supervenes it often proves fatal. A dose of castor oil with from twenty to forty drops of laudanum, according to the animal's strength, will cure both indigestion and diarrhoea in mild cases. In severe cases it is recommended by our highest authorities to give forty to sixty drops each of laudanum and sulphuric ether in a little water. At intervals of three or four hours supply from a bottle 4 to 5 ozs. of new milk diluted with an equal bulk of lime water. If the milk, however, continue to disagree withhold it for several days, and sustain the calf with well-boiled starch gruel, of which 6 or 8 ozs. are given every three or four hours; white of egg or beef tea stirred amongst it renders it more nutritive. Condensed milk and Liebig's farinaceous food are also useful in such cases when the ordinary milk keeps up the wasteful diarrhoea. These remedies are recommended by Mr. Finlay Dunn in Professor Sheldon's great work on Dairy Farming. We quote them confidently because we have applied them in our own practice successfully.

(To be continued.)

WORK ON THE HOME FARM.

On our Sussex farm the corn is so far advanced that hoeing is practically at an end for the season, but in Suffolk the hoes are still in full activity among Beans, Wheat, Peas, Barley, and Oats. All this work is done by the acre, and it is a sign of the times when plenty of men are found eager to do such work for 4s. an acre. Let men in southern counties understand this, for they think themselves badly paid at 6s. an acre, and yet the extra 2s. is a serious matter to many a struggling farmer. The horses are now kept daily upon the land in preparation for Swedes, and in cleaning fallow, which, when clean, are sown with Mustard or with Rape, Cole or Tares for sheep-folding, we actually found thirty acres of bare fallow upon a farm which we have lately taken in hand. "What are you doing or intending to do with it?" asked we of the bailiff. We could get no clear answer from him, only some vague talk about Wheat and Barley for another season. Orders were at once given for the cleaning of that land, and the sowing of the whole of it with White Mustard, for it is both foul and poor. Upon another farm we were asked by the bailiff for leave to use artificial manure for his Swede instead of farmyard manure, which he said was required for next season's Wheat. Now this man had six horses at work striking out furrows for manure, so that the work was sufficiently advanced to admit of the farmyard manure being carted in ample time for getting in the Swede seed, so our decision was—No, use the farmyard manure for the roots, and we will have an autumn and spring dressing of genuine artificial manure for the Wheat.

Yet another instance of want of thought or of ignorance upon another farm where the land is very poor. The sheep had been turned upon—not folded upon—nine acres of Rye Grass, which was being ploughed for Colewort for the sheep again. We at once decided that nine acres should be our first piece of White Mustard upon that farm—not to be eaten by the sheep, but to be ploughed in as soon as it is in flower. To go on attempting to get crops out of poor land year after year without making a bold effort to begin that reform which is so much wanted among farmers—we mean thoroughness of cultivation—is altogether wrong. If rents are too high let them be reduced, but only when a tenant is known to be worthy of it. Better, far better, take the land in hand and show that with favourable seasons something more than the mere rent is still forth-

coming from it. Let us be cautious in what we undertake, but after due consideration let us resolve to do the whole of our work as well as is possible. We have had a hot dry summer, a fine autumn, an equally fine spring; is it possible that we can let such noble opportunities slip and not have the land clean now?

REVIEW OF BOOKS.

The Early Maturity of Live Stock. By HENRY EVERSHED. The "Field" Office, 346, Strand.

THIS little pamphlet contains in its thirty-two pages a clear pithy explanation of a matter of vital importance to all farmers, for, as it says, "the early fattening of bullocks as well as of sheep is essentially a practical subject." It tells how cattle "roughed it" during winter fifty years ago; how even ten or twelve years ago the "cracks" of the shows were always three years old, that being then considered the earliest period at which they could be had ripe for the butcher. It then sets forth in full detail how a clear gain of a year has been effected, and the process of breeding and rearing, with its happy and profitable consummation of full maturity at the age of two years, or something less. It goes even farther, and tells of a Hereford weighing 920 lbs. at 350 days old, which is equal to a daily gain of 2.62 lbs.; of a Devon weighing 809 lbs. at 388 days old, having gained daily 2.09 lbs.; and of a Shorthorn which had gained daily from birth 1.74 lb. It also shows the importance of early maturity in sheep, and how it has been attained. Numerous facts and figures are given, every page containing valuable and important information upon this important subject. It is our earnest desire to do all we can to promote the breeding of improved live stock, and we cordially welcome this compilation of facts set forth in such an able manner by Mr. Evershed as an important means to that end.

Pastures Old and New: a Plea for the Improvement of Old Turf, Better Systems of Grassing-down, and the Prolonged Tenure of Alternate Husbandry Grass-layers. By JOSEPH DARBY.

ALSO issued from the *Field* office, this work is equally valuable. Thoroughly practical and sound, its teaching is that of the most advanced school of agriculture, altogether devoid of mere theoretical assertion, for its six chapters set forth facts and nothing more; but facts of such great value that all farmers desirous of holding their own in the stern battle with hard times should fully master and apply them to practice. It treats briefly of the poverty and foulness of old pastures and the remedy. The laying down of new permanent pasture, with cultural details and selections of seeds. Mr. Faunce de Laune's system is explained; its simplicity and economy shown in comparison with more complicated and expensive ones. Chapter 4 is a valuable one, showing fully and unmistakably how great Mr. Faunce de Laune's success has been, not only in preventing the too common deterioration of new pastures, but in effecting such a steady annual improvement that at four years from the time of sowing the seed what was originally regarded as the poorest land on the Tharsted estate was actually affording food for sixteen sheep per acre. In the other chapters we are told how geological influences upon the various grasses are now known not to be so important as was at one time supposed. The great value of Lucerne and Tall Fescue (*Festuca elatior*) as drought-resisting plants is shown; and, lastly, Alternate Husbandry is also well treated of, and the advantage shown of sowing more of such permanent grasses of vigorous growth as Cocksfoot and Timothy with the Clovers for a three to six years lay.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	9 A.M.				IN THE DAY.				Rain	
	Barometer at 32° and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.		On grass.
1885.										
May.										
	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	In.	
Sunday 10	29.942	47.3	44.4	W.	47.6	55.8	41.3	102.0	37.3	—
Monday 11	30.048	45.0	39.4	W.	47.7	57.5	37.3	106.6	32.0	—
Tuesday 12	30.186	49.9	44.0	N.E.	47.8	59.2	35.2	104.6	27.5	—
Wednesday .. 13	29.887	49.2	42.0	E.	48.2	56.4	36.7	94.5	28.4	—
Thursday ... 14	29.860	50.9	45.7	N.E.	48.4	58.4	36.9	106.6	30.4	—
Friday 15	29.984	51.3	45.5	S.W.	49.3	62.1	37.0	113.4	30.2	0.012
Saturday 16	29.840	52.7	46.0	W.	51.2	60.4	42.3	113.3	35.2	0.010
	29.978	49.5	43.9		48.5	58.5	38.1	105.9	31.6	0.022

REMARKS.

10th.—Showery morning, bright after 10 A.M.

11th.—Bright day.

12th.—Fine and bright; warmer.

13th.—Bright and fine.

14th.—Fine, but overcast at night.

15th.—Fine, but not much sunshine.

16th.—Gusty, with rain at 7 A.M.; bright afterwards, but thunder at 4.4 P.M., with shower.

Temperature much the same as last week, and below the average. Frost on grass on five nights, but not very sharp. A dry week.—G. J. SYMONS.



28	TH	Sale of Imported Orchids at Stevens' Rooms, Covent Garden.
29	F	Sale of Imported Orchids at Protheroe's Rooms, Cheapside.
30	S	National Tulip Show, Botanic Gardens, Manchester.
31	SUN	TRINITY SUNDAY.
1	M	
2	TU	
3	W	

OPPOSITION.

IT has often been said by persons who ought to know something about the matter that the general excellence of the fundamental laws of this country, and the stability of the constitution, are the result to a very large extent of the powerful opposition to which everything has been and continues to be subjected in the British legislature. No matter if the opposers are not particularly strong in numbers; they can and will exert great influence, for as a rule the smaller the minority of able men the greater is the energy they display in the prosecution of an object that they feel to be right. The duty of an opposition is to find all the fault possible with whatever may be introduced for discussion, and the more searching the examination is with the object of finding out the weak points of a case the better as a rule is the completed work. Whatever may be introduced, especially in the way of novelty, is and ought to be subjected to the closest, keenest, and most unflinching examination; then, after passing the trying ordeal, we may expect it to be good because of the removal of everything pertaining to it of a doubtful nature.

And opposition is not by any means limited in its benefits to legislative matters. Rightly conducted, and with the sole object of enlightenment and improvement, it is good for everything. It is no doubt flattering to the vain man to have everything he says applauded and everything he does accepted "with thanks." It is more agreeable to the majority of persons to cheer than to groan, and perhaps on that account there is a tendency to please oneself and others by occasionally being a little too liberal in our plaudits, and justice is swamped by generosity. Yes, opposition is good to whatever it is fairly directed, and it is not less needed in horticultural affairs than in other matters of a public nature. Perhaps it is because of the opposition to which almost every process of gardening is subjected in the press that the work in gardens is, speaking broadly, so good in this country, and those who have travelled far and examined closely say it is the best in the world. Would British gardens have been so fertile and the culture of plants, fruit, and vegetables so well conducted if there had been no gardening press through which an interchange of the views of cultivators could be effected? A negative reply may safely be ventured; but to the next question the answer of the majority will probably be in the affirmative. This is the question:—Have not those persons who have from time to time communicated their views with the object of imparting information, or guiding others to arrive at a right decision on matters under discussion, increased their own knowledge, and those of them who are gardeners benefited themselves by their endeavours to benefit others? and, further, have not the same individuals learned more through being opposed than supported in their views and arguments? There is scarcely a doubt that they have, and, consequently, the very opposition that they have had to

encounter, though it may not have been specially palatable at the time, has in the end proved of decided advantage.

Nearly all the greatest men in the world owe their position, to a very large extent, to the obstacles they have had to combat. Their mental powers have increased with the using, just as the blacksmith's arm increases in strength by exercise in his calling. It is the same in gardening. Opposition of matter or men steels to more strenuous effort, invites to deeper study, impels to greater research, and ends in the acquirement of greater knowledge. This is because it must be so, and most of the best gardeners of the day, and persons who occupy good positions in the horticultural world, will recognise their indebtedness to the impediments they have had to meet and encounter in their early days. But for these their whole strength would not have been called into action, and their full powers would never have been developed. Opposition, then, is good. Let no one fear it, but endeavour to profit by it, as every man of mettle will assuredly do if he persistently and perseveringly exercise those faculties with which he is endowed, and avails himself of all the resources within his reach to sustain his position; then, whether he succeeds or fails in any particular work or controversy, he will necessarily be a wiser man.

There has been no lack of opposition displayed on various subjects that have been under review in this Journal of late. The views of individuals on particular and important matters have been somewhat closely examined, and their arguments freely dissected. This is a healthy wholesome sign, as showing the deep interest that is felt in the work in which we are engaged, and the strong desire that manifestly exists to elucidate what has been felt to be more or less obscure. A disposition has been manifested to examine somewhat deeply matters of commonplace character, and the everyday processes of watering and trenching have received particular attention. It is not suggested that any one individual has been right in everything he has said, and probably not one of those who have taken part in the discussions would like to air his egotism by making any such proclamation on his own behalf. It is much more likely that everyone has said something better than his opponent has, and it is for the general reader to benefit by appropriating the best of the hints that have been scattered—the best because the most adaptable to his own circumstances and most applicable to his own case.

Besides time-honoured practices being assailed new notions have been advanced and have met with a mixed reception. It is quite right if some concur with what is advanced that others should dissent; it is only under those circumstances that the truth can be evolved, and if a proposition will not endure criticism it must fall, while if not worthy of being criticised it is palpably weak. Nothing, perhaps, is so chilling to the earnest man as cold silence. "Applaud me if you will," he says in his inner breast; "but failing that, comb me the wrong way, dissect me, expose all my weakness, even abuse me—anything, but do not ignore me." It entirely depends on himself whether he is ignored or not. If he talks on commonplace things in a commonplace manner, drawls out long tedious sentences, so intertwining and entangling his words that he taxes the mental efforts of his readers or hearers to follow him, he repels rather than attracts attention, and he is not opposed because his productions do not merit opposition. Still it must be remarked a great deal is published in this Journal, for instance, worthy of criticism that escapes that honour, while some may possibly get an undue share of it. More readers might with advantage share in examining and even opposing the work of others, but in all cases the work and not the workers should be the object of attention, for to make the matter a pretext for humiliating the man is as ignoble as it is fortunately rare—rare because the evil cures itself, for no one can long indulge in that peculiar kind of opposition without undermining his own character for honesty, integrity,

and fairness of purpose, until there is little of it left to respect, and he must sooner or later change his methods or collapse. Let the young writers who may feel impelled to be smart and pungent remember that, for it is true; at the same time a critic may be piquant without being offensive, and then his productions are sure to be read.

All who oppose should respect their opponents or let them alone, not regarding them with other than the most friendly feelings—as assistants rather than enemies, engaged in a different way and searching over different ground for a common object, but each animated with a spirit of rivalry that renders the search lively and the more enjoyable if even a little exciting. Opposition then becomes both pleasant and instructive, hence desirable. Having had a fair share of it, and been somewhat hardly driven from time to time by able opponents whose arguments and experience command respect, and with the possibility of more to follow, I have been led to indulge in an evening's reflections on the whole subject, to which I have only now to append the signature of—A THINKER.

IN THE GARDEN.

TULIPA GREIGII.—This is one of the most effective flowers now in beauty (May 19th). I have sixteen bulbs bearing large brilliant blossoms of varying shades of scarlet. No two are precisely alike; there is some variation, either in form or more generally in coloration, and the blotching inside the perianth, but all are extremely showy—gorgeous I may say, especially when the large egg cup-like perianths open to the spring sunshine. If I only grew one species of Tulipa it would certainly be this, as it is in my opinion most satisfactory; the merest tyro in hardy flower culture is at once charmed with it, and regards it as an acquisition to be eagerly sought. It may be weakness on my part, but I like it all the more because it is a true species and not a florist's variety, for in this we have an instance in which Nature has adorned one of her own true children in the most gorgeous colouring without the aid of the hybridist's pencil, although, please understand, my soul is broad enough to love the Tulips of the florist as well. I am sure I err not when I say every grower of hardy bulbs should do his utmost to secure a good clump of this beauty, as it is certainly one of the most distinct and brilliant of all hardy spring-flowering bulbs. I wish particularly to eulogise a charming association of this and *Narcissus Tazetta Grand Monarch*. I had a clump of these two mixed. There were four bulbs of *T. Greigii* and six of *Grand Monarque*, and as they both come in bloom at the same time, the effect can be more easily imagined than described. The picture lasted well, but faded too soon, although its impress is still fresh in my mind, and will never be forgotten. Next season I hope to devote a small bed to this happy companionship.

I have another charming Tulip under the name of *T. scabriscapa*, which came from the collection of the late Mr. Harper Crewe. The perianth is of a clear lemon colour with large well-formed segments. So pure is the lemon that it is unique in colouring amongst a lot, and in such striking contrast with a deep vermilion-flowered kind under the name of *T. iliensis*. The perianth is large, the outer divisions paler in colour than the inner ones, and feathered with yellow outside, while the inside base of the inner ones is quite black, not blotched as in *T. Greigii*, but uniformly black about a fourth of the way up. It is a vigorous grower, and forms with *T. scabriscapa* a very desirable contrast. *T. Orphanidesii* is also still in flower, of an orange-brown colour, the outer division feathered with green, while the inside is blotched with black. This is a very distinct, but not handsome species. The perianth divisions are rather sharp-pointed, or nearly acuminate. Other kinds, such as *biflora*, *triphyllo*, *Clusiana*, &c., are faded, while a few others are still unexpanded.

RANUNCULUS MILLEFOLIATUS.—This is a charming little Buttercup. As its name implies, the leaves are freely divided, the segments being rather narrow, of a very rich green, and produced from the fasciated roots in tufts. The flower stems of my plants are about 4 inches high, but I have seen them as much as 6 inches in one or two places, each supporting bright yellow flowers about 1 inch to 1½ inch across, forming a very pretty little tuft, and amongst the Alpine Buttercups it is to be favoured, because several of them are not so amenable to cultivation as it is. I may name one or two others, however, which are very satisfactory with me, and associate well with this; one is *Tranfellneri*, a diminutive species, forming small tufts of foliage, and slender stems carrying white flowers about three-quarters of an

inch across. *R. anemonoides* is another little gem, flowering very early, and not by any means fastidious. While *R. amplexicaulis* is one of the best, growing freely under most conditions, but does not like being disturbed often; in a strong tuft its pretty glaucous foliage and white flowers look well. I have these on a well-drained sloping border facing the west, and they appear to thrive happily, and I shall leave them undisturbed.

TWO MONTHS OF NARCISSI.—Of course I include Daffodils, for generally those kinds with large trumpets, forming the *magni-coronati* section of Mr. Baker, are called Daffodils, while the other two series with the medium and small cups are called Narcissi, but the distinctions will soon be nil between them; the hosts of intermediates are fast bridging the gulf between the so-called distinct groups, that for gardening purposes one name must soon be generally adopted. I have no hesitation in calling them all Daffodils. The redoubtable *N. Sir Watkin* (alas! its namesake is taken from us), is rather more than half way between the *incomparabilis* and *Ajax* sections, and it is a puzzle to many how this magnificent variety became possessed of the large cup it has. Surely there must have been some blood from *Ajax* introduced to a major form of *incomparabilis*; and yet, where and when accomplished, there is no record. Those who know most of *Sir Watkin* can furnish no information upon this point. Mr. Pickstone has received undue honours in connection with it, for I have good reason to believe it was cherished long before that gentleman was born. It has been suggested that it might have been an escape from Mr. Leeds' garden. Surely this is sheer presumption, for long before Leeds hybridised Narcissi this was grown; at least, that is my opinion, based upon the best available evidence. But I am digressing far from the text. Fancy such a season of Daffodils—beautiful brave forms—which begin at the end of February, and even earlier where *N. pallidus præcox* is grown, and last quite to the end of June. Those now in prime with me (May 20th) are *juncifolius*, *gracilis*, *triandrus*, this is late; *intermedius bifrons*, *poeticus recurvus*, *p. grandiflorus*, a grand variety; and *p. fl.-pl.* just coming in, while several others are lingering. Since the first expanded what a host of beauties we have seen and admired. These are flowers which must be planted more largely than ever. Unfortunately the price of many of the choicer and most beautiful precludes them from becoming generally cultivated, but there are many varieties which may be had at reasonable figures, and which are among the best for general purposes.

The following I regard as the best. In the large trumpet section—*Horsfieldi*, *Empress*, *Emperor*, *Michael Foster*, *spurius coronatus*, *major*, *maximus*, *princeps*, *Dr. Hogg*, *F. W. Burbidge*, *Exquisite*, *Wm. Goldring*, *Cowani*, and *moschatus*; the last six varieties are the white or "Silver Daffodils," of which *moschatus* may be taken as the type. They are all extremely beautiful, in fact I prefer them to any. In the peerless section I may mention *Mary Anderson*, *albus stella*, *Barri conspicuus*, *Charles E. Backhouse*, *Sir Watkin*, *Leedsii Silver King*, *Queen of England*, *albus Sensation*, *Flora Wilson*, *Princess Mary of Cambridge*, and without prejudice several others might be added; while the duplex forms, called *Eggs and Bacon* (*Orange Phoenix*), and *Codlins and Cream* (*Sulphur Phoenix*), should be included in all collections. In the small-cupped section the following are good. Taking the poeticus series first, we have *ornatus*, *grandiflorus*, *poetarum*, and the double form; in the *Tazettas* there is *orientalis*, *Grand Soleil d'Or*, *gloriosa*, *Grand Monarque*, *Bathurst*, and *Lord Peel*; in the *Burbidgei* series there is *Joe*, *Model*, *grandiflorus*, *delicatus*, and *aurantius*; in addition to the above in this class there are the *Jonquils*, and no one should exclude the exquisite little *Queen Anne's* double variety. I am sorry not to mention many others, but space forbids.

DOUBLE PRIMROSES AND POLYANTHUSES.—I am now busy raising these, dividing and transferring to as shady a position as I can find for them. Unfortunately there is not much shade in my small area, but the best is done that can under the circumstances to afford them the summer treatment they require—viz., immunity from hot sunshine, for when exposed to that red spider is fearfully troublesome. A shady border on the north side of a wall is best for them. It should be well worked, and a good quantity of leaf soil, thoroughly decayed manure, and sharp sand well worked in with the soil, and in this position they will remain till autumn. Some of the double Primroses, especially *Cloth of Gold* and *Golden Gem*, are still holding on, and consequently will be left until last. I did not previously believe in the difference between these two varieties, but as both have flowered well with me this season I am happy to recognise the difference. These double Primroses are truly a most interesting and handsome series of spring flowers well worthy the most liberal treatment. There appears to be some confusion as to what is double rose. I have received at least three varieties for it, one a

dirty pink, another rich salmon-rose, another quite purple, and what is usually distributed as purple; but there are two or three purples. I hope at some future time to be able to grow every variety obtainable side by side.—T.

ONIONS AND CARROTS FAILING.

ALL cultivators of these two useful vegetables know how liable they are to fail at this season. The seed may be thoroughly good, sown at the right time, germinate freely, and the young plants appear strong and healthy, when it is noticed that a few are withering at the points, then they die, and often in a very short time the whole of the plants die. Probably this occurs in three gardens in every score throughout the country. Those who have learned from experience what may happen generally try to introduce a quantity of soot, lime, or some other grub antidote before sowing the seed, and this is a capital plan. Others who may always have been perfectly free from anything of the kind may not trouble to take any precaution, but it is in cases like this an attack of grubs may prove most destructive, and just now is a season specially favourable for it. Last year was a very bad season indeed for Onions, and it is to be hoped this one may be much better in this respect.

We have not lost our Onion crop for more than ten years, and the Carrots never entirely fail, and rarely partially. We attribute our immunity to the few precautionary measures we take about this time every year with our crops. We have long noticed that grubs work much more freely in loose soil than in that which is quite firm, and as soon as it can be seen where our Carrot and Onions rows are we have the soil trodden down on each side as firmly as the men can make it, and from the time the plants are above ground until bulbs and roots are becoming prominent we dust the rows with soot weekly if it rains. A small sprinkling of salt is put on the Onions too, and sometimes a little guano. This may be regarded by many as very simple treatment, which may have failed with them, and this can be accounted for. We dress our Onions and Carrots as a preventive; others may dress them as a cure. There is a great difference in this. I do not know of anything which will really destroy the Onion maggot when once it has secured a footing. It generally works from the bottom up through the bulb, and no material which can be used then will penetrate to its quarters; but when it is in the soil and not under the shelter of the bulb the case is very different, and it is only at this early stage the pest can be successfully stamped out.—A KITCHEN GARDENER.

THE STEM ROOTS OF LILIES.

ARE stem roots beneficial to the future flowering bulb, or are they not? That appears to me to be the real point at issue. That they are of more or less assistance to the flower stems I think few will deny, and "Thinker" sums up that part of the question with his customary terseness and logic when he says they are "of great service when they come." That the flower stem will continue to develop after being severed from the bulb, if the roots at its base are preserved, I have proved practically, but I regret to say that I failed to make a note of the behaviour of the bulb afterwards.

It has been asserted by an authority on Lilies that stem roots are positively detrimental to the proper development of the new bulb, "because they impoverish the soil and twine themselves in and out among the scales, suck out the sap, and destroy the bulbs for the next season's bloom." Now that is a strong case against stem roots, and in many instances too true. "Thinker" says the finest examples he has ever seen had no stem roots. Will he have the kindness to tell us if the young bulbs of those examples produced as fine and floriferous flower stems the following season? I venture to say that we must look to the cultivation of the previous season or of the intervening winter for the cause of stem roots if they are the result of improper cultural treatment, and not the outcome of excessive vigour. My observation, up to the present, has led me to think that stem roots are invariably produced when the parent bulb does not contain within itself, and supplemented by its own roots, sufficient nourishment for the flower stems as perfected within the bulb itself the preceding season, and that the production of adventitious or stem roots is the effort of Nature to supply that which, from some cause or other, there would otherwise have been a deficiency of, and that the strength or thickness of the stem is immaterial—in other words, a strong stem is as likely to have stem roots as a weak one, and *vice versa*.

"Thinker" further says, "but that they do not come if not wanted for the full and adequate support of the plant and future bulb." That statement in its application is diametrically opposed to the opinion of the authority previously quoted; and yet is it not quite possible for both statements to be correct?

To be of any assistance to the flower stem the stem roots must take up food from the surrounding soil, therefore there is so much less nourishment in a given space for the roots that support and build up the future bulb, consequently the soil is impoverished, and the future bulb proportionately diminished in size and vitality. But "Thinker" says they—the stem roots—only come when they are wanted for the full and

adequate support of the future bulb as well as the plant. If that is so, how does the bulb receive the support? by direct or indirect means? I take it that the bulb receives benefit indirectly, first by being relieved of a considerable proportion of the work of supplying the stem with nourishment, and secondly by receiving a larger return of elaborated sap—for I do not think that the foliage of Liliums is utterly useless or devoid of vital functions—than it would receive from a smaller, weaker, and entirely bulb-supported flower stem. The question will be asked, "Is not the benefit received by the bulb by those means more than counteracted by the impoverishment of the soil?" I think it would, all other conditions being equal. But inasmuch as under the conditions in view (pot culture alone) Nature cannot help herself, Art must assist Nature, and this is the cultivator's opportunity. Strong exception has been occasionally taken to top-dressing Liliums, but I am inclined to think that more harm is done by careless watering afterwards than by the top-dressing itself, but the latter gets the blame. Every good plant-cultivator knows how difficult it is to water plants properly after they have been top-dressed, how misleading the dressing is to the inexperienced, and how apt the ball of the plant is to be either too wet or too dry. The Lilium being easy of cultivation receives in the majority of cases very little attention and care in watering; and when they have been top-dressed this carelessness frequently leads to disastrous results. If the top-dressing is of a close and adhesive nature it retains moisture much longer than the proper Lilium soil does, and this leads to a deficient supply of water. On the other hand, if it is very light and loose, the water is quickly evaporated at the surface, the soil in which the principal roots are becomes cold, wet, and sour, the roots become inactive or perish, and the new bulb, when the plant comes to be repotted, is only a half or quarter the size it should be, and in many cases it has disappeared altogether. The Lilium requires constant supplies of water (more during the growing period than at any other time), but stagnation is death to them.

I have said that in the case of Liliums grown in pots that "Art must assist Nature." By this I mean it to be clearly understood that more nourishment should be applied to the soil than the stem roots themselves can appropriate; thus the bulb roots will receive an adequate degree of support and not be impoverished, as they would otherwise. In practice here we feed, as nearly as we can, in proportion to the quantity of stem roots, and we have not yet had reason to regret doing so. The more stem roots there are the more liberal we are with stimulants, and our Liliums are, year after year, the admiration of all who see them. Theoretically this treatment may be radically wrong, but it answers well practically.

Too frequently Liliums are repotted too late and planted too deep in the pots. Nothing is more conducive to failure than to turn the pots on their sides after flowering, and to place them in some out-of-the-way place, where they can have no water until the following spring.

The flowering bulb for the following year commences rooting before the parent bulb has ceased flowering. Therefore, to deprive them entirely of water and fresh food for three, four, or five months after flowering causes deteriorated and deteriorating bulbs the following and each succeeding year.

Most Liliums should be repotted immediately the flowers fade, without waiting for the "ripening" of the leaves and stem, because if the young roots have made much growth before being shaken out they are very liable to be seriously injured through breakage, &c. The pots should be well drained and a good body of compost placed therein sufficient to bring the top of the bulb within 2 or 2½ inches of top of the pot; cover the bulbs with not more than an inch of soil and place the pots upright in a place where they can be kept cool and moist and safe from frost until the young growth appears above the surface of the soil, when they ought to be placed in light and cool structure such as a cold frame. For Lilium auratum the soil we use is two parts rough peat, one part leaf mould, and one part sand; and for all the varieties of L. speciosum we add one-part loam and one part old Mushroom bed. When we consider it necessary to use a top-dressing of soil we apply it of a similar texture to the above, but rather richer. Liquid manure is given at every alternate watering.—READER.

[We never saw a finer display of Lilium speciosum than a collection admirably grown by our correspondent.]

PERMIT me to offer a few remarks respecting these Liliums. The view that your correspondent, "Scientia," page 333, has taken after his extended observations seems both novel and remarkable. "Surface roots," he observes, "are a sure indication of sluggish root-action below." If "Scientia" had had occasion to handle the thousands of L. auratum that have passed through my hands he would have learnt ere this that 95 per cent of imported Lilies commence the basal root-action first, and in many instances have made numbers of roots below before the stem growth emerges from the orifice of the bulb. This season the whole of our L. auratum (all imported ones) were placed in boxes of cocoa-nut fibre in a cold shed. These comprised several hundreds of bulbs, and were, according to trade custom, sorted in sizes. From time to time they were overhauled and the fungus-affected parts removed. This decay more readily detected after the bulbs have been in the fibre for a week or two, there being sufficient moisture in the fibre to plump the bulbs and at the same time to accelerate the decay of the bruised portions of the scales; and it is, I feel sure, due to these affected parts, decaying in the soil and continuing about the bulbs that a great per-centage of the annual losses arise. Where Liliums remain in the ground year after year the basal roots are generally emitted after the flowering is completed, and for that reason it has been urged by many that this is the best time for potting them. Bulbs of Lilium auratum are lifted for exportation, and nearly always in

an immature state. They are also deprived of stem and roots unmercifully and without thought, and then gathered as we may Potatoes at home, packed and despatched to England. On the voyage the half ripe bulbs must suffer to a great extent, and what is more injurious? and then having been sold in London or elsewhere by auction they pass into the retailers' hands, and finally to those of private growers. Can these bulbs be expected after such exposure and hardship to produce results equivalent to bulbs which have remained untouched in the ground? The cause of many bulbs failing to make either much root or produce flowers is due to the fact that they are lifted in an immature state, and this to some extent accounts for the contorted stem growth so often seen in these Lilies.

I have grown Lilies of the *L. umbellatum* or *davuricum* group, and their pots filled with roots (a perfect mat), and at the same time quite meagre of roots about the surface. These were home-grown bulbs, and all flowered well. This season I have some bulbs of *L. candidum* potted in autumn (good bulbs, too), and which have hardly made a root yet (May 2nd), and again some bulbs of *L. speciosum* potted at the same time are vigorous, making roots plentifully above and below, while *L. davuricum* is sturdy, well rooted, and with prominent flower buds. I need hardly remark that these stem roots are much more numerous on some species than on others. The long-flowered section have, as a rule, only a few; while *L. auratum*, *L. speciosum*, and *L. umbellatum* have numbers. The statement made by "Scientia" that "surface roots are unnatural and only produced when the proper roots are defective," is mere fiction, and it is no more unnatural for Lilies to produce two distinct sets of roots than it is for some Primulas to do so. In the latter case, while leaf growth is going on the roots are composed of innumerable fibres, and when this is complete (I confine myself now to *P. japonica*, *P. rosea*, and *P. denticulata* group more particularly), and while the flower spike is being formed, strong vigorous fleshy roots are annually made that go deeply into the soil. Again, as further proof that these roots are by no means unnatural, I may mention some clumps of *auratum* which I had charge of in a garden some years ago, the vigorous root-action below being well illustrated by the numerous bold stems which annually carried from thirty to seventy flowers each. These had formed quite a colony, and the surface was a mass of roots, which received annually a heavy mulching of well-decayed cow manure.—E. JENKINS.

DUKE OF BUCCLEUCH GRAPE SPLITTING.

My name has appeared in the pages of your valuable Journal in connection with this noble Grape splitting. Everyone has not the convenience to grow the Duke in what are regarded as particularly suitable houses and a limited amount of moisture in the atmosphere as some of your correspondents have. My Dukes are growing in a vinery 30 feet long, with several other varieties, and all get the same treatment.

There are seven Vines—namely, three Black Hamburgs, one Lady Downe's, one Muscat Hamburg, one Mrs. Pince, and one Gros Colman. The other varieties, which are grafted, are Alnwick Seedling, Gros Maroc, Duke of Buccleuch, Gosford Black, Muscat of Alexandria, Buckland Sweetwater, Raisin de Calabre, Golden Queen, Duchess of Buccleuch, Mrs. Pearson, Black Alicante, and Cooper's Black. These are now in fruit and can be seen by anyone.

Now, what about limiting the moisture in the atmosphere where so many varieties are growing in the same house? Those who condemn the gimlet should give it a fair trial before they write against its use. I have used it to prevent splitting for the last eight years, and the result has always proved most satisfactory, never having a split berry after using it. The Duke is not so liable to split where it is not in high cultivation or growing in a light dry soil. I shall never be alarmed that any ill results would follow the use of the gimlet.—A. KIRK, *Norwood, Alloa.*

BATH SPRING SHOW.

MAY 13TH.

THE second of the five Exhibitions that have been arranged by the Bath Floral Fête Committee was in every respect a success. Liberal prizes were offered, the result being a grand display, more especially of flowering plants, which were fully appreciated by the crowds of visitors that thronged the three large tents and the beautiful Sydney Gardens where the shows are held. We cannot speak very highly of the arrangement of the exhibits, notably in the case of the best specimen flowering plants. Many of these were extra large and good, and to these were assigned much the smallest tent, while the cut flowers, Calceolarias, Cinerarias, and other comparatively insignificant plants presented by no means an imposing appearance in a rather large tent. The judging was completed much earlier than usual, and everything was done to favour an early and enjoyable inspection.

Greenhouse Azaleas.—As usual these included many extra fine trained specimens. With nine plants Mr. W. Long, gardener to C. Gardiner, Esq., was easily first, having grand profusely flowered pyramids, about 9 feet high, of Stella, Magnet, The Bride, Roi d'Holland, Duc de Nassau, Iveryana, Guillaume, Criterion, Model, Stanleyana, and Souvenir du Prince Albert. Mr. C. H. Keel, gardener to Col. Landon, was a good second with smaller, but fresh and well-flowered pyramids; and Mr. J. Cypher, Cheltenham, third with large and fairly well flowered untrained bushes. Mr. W. C. Drummond, Bath, was first with nine specimens, and Mr. G. Hallett,

gardener to Mrs. West, second, both staging creditably; while the prize-winners with six plants were Mr. J. F. Mould, Pewsey, and Mr. A. Hawkins, gardener to T. Jolly, Esq.

Specimen Flowering Plants.—There were three very good lots of twelve plants shown, but Mr. Cypher was easily first with beautifully flowered specimens of *Hedera tulipifera*, *Franciscea eximea*, *Pimelea Hendersonii*, *Anthurium Schertzerianum grandiflorum*, *Azalea Charmer*, *Pimelea spectabile*, *Aphelaxis macrantha purpurea*, *Erica depressa*, *Anthurium Schertzerianum*, and *Erica Cavendishiana*. The last named is a magnificent plant, measuring fully 6 feet through, very symmetrical, and beautifully flowered. Mr. W. Long received the second prize for a most creditable collection, among which were grand plants of *Ixora Prince of Orange*, *I. Williamsii*, *Pimelea spectabile rosea*, *Rhododendron Gibsonii*, and *Anthurium Schertzerianum*. Mr. J. F. Mould was a good third. With nine plants Mr. W. J. Mould, gardener to E. E. Bryant, Esq., took the lead, his best being a beautifully flowered *Hedera tulipifera*, *Erica Cavendishiana*, *Clerodendron Balfourianum*, *Anthurium Schertzerianum*, and *Pimelea spectabile rosea*. Mr. C. H. Keel was a good second, his collection including well-flowered specimens of *Rhododendron Sesterianum*, *R. Gibsonii*, and *R. Veitchii*. Mr. H. Jones was third. Mr. G. Tucker was first with six plants, these consisting of medium-sized and very well flowered specimens of *Azalea Mille Leonie Van Houtte*, *A. Herman Siedel Liebig*, *Erica alba*, *Epacris Eclipse*, *Statice profusa*, and *Anthurium Schertzerianum*. Mr. Hallett was second with neat healthy plants. In the class for one stove plant Mr. W. Long was first with *Ixora Williamsii* in excellent condition, and Mr. Cypher was second with a well-flowered specimen of *Franciscea calycina major*. In the corresponding class for a greenhouse plant, a perfectly flowered *Hedera tulipifera* gained Mr. W. J. Mould the first prize. Mr. W. Long following with *Pimelea mirabilis*.

Fine-foliaged Plants and Ferns.—The former were not so well shown as usual, the Crotons especially being in poor condition. With fifteen specimens Mr. Cypher was first, these including healthy and fairly large examples of *Pritchardia pacifica*, *Encephalartos villosus*, *Dasyllirion acrotrichum*, *Latania borbonica*, *Cycas revoluta*, *Kentia Canterburyana*, *Phormium tenax variegatum*, *Pandanus Veitchii*, and Crotons Princess of Wales, Warrenii, and Sunset; Mr. J. T. Mould was second with a creditable group. For nine plants Mr. W. C. Drummond, Bath, was placed first, his only really good specimens being of *Latania rubra*, *Latania borbonica*, *Pandanus Veitchii*, and *Kentia australis*; Mr. B. Hopkins, gardener to John Bayley, Esq., Frome, was a creditable second. All his plants were very healthy, *Croton magnificum*, *Asparagus plumosus scandens* on a balloon-shaped trellis, *Pandanus Veitchii*, and *Begonia Rex* being the most noteworthy. A very fine specimen of *Cycas revoluta* gained Mr. Drummond the first prize for a single plant, Mr. Cypher following with a smaller plant of the same species, while to Mr. W. J. Mould was awarded an extra prize for a good sized plant of *Encephalartos horridus Bryantiana*. Several good groups of Ferns were staged, but the majority of the plants were more remarkable for freshness than size. The best fifteen varieties were staged by Mr. W. J. Mould, these including *Gleichenia rupestris*, *Cheilanthes elegans*, *Adiantum Farleyense*, *Gleichenia Spelunca*, *Davallia Mooreana*, *Cibotium regale*, *Dicksonia antarctica* and *Davallia Mooreana* in good condition. The second prize was awarded to Mr. J. Coke, gardener to A. P. Stancombe, Esq., Trowbridge, but this position would have been taken by Mr. G. Tucker had he not included a *Selaginella* in his group. Mr. H. Jones was easily first with nine Ferns, and Mr. W. C. Drummond second, both staging healthy specimens of popular kinds.

Orchids.—A considerable improvement in point of both numbers and quality was noticed in the classes provided for Orchids. Mr. J. Cypher took the lead with six varieties, these consisting of medium-sized and well-flowered examples of *Odontoglossum cirrhosum*, *Cattleya Skinnerii*, *Dendrobium nobile*, *Cattleya Mossiæ*, *Oncidium ampliatum*, and *Masdevallia Harryana*. Mr. F. Perry, gardener to H. C. W. Miles, Esq., Bristol, was second, his collection including *Cymbidium Lowianum*, *Ada aurantiaca*, *Cattleya Mossiæ*, and *Vanda tricolor* well flowered and fresh. Mr. W. C. Drummond was third. With three varieties Sir A. Ramsay was easily first, having *Dendrobium nobile*, *Cymbidium Lowianum*, and *Cattleya Mendelii* in good condition; Mr. Perry was again second, and Mr. W. J. Mould third. Sir A. Ramsay was also first with a single specimen, a finely flowered made-up pan of *Cattleya Mossiæ*, Mr. C. H. Keel, following with a beautifully flowered plant of the attractive *Dendrobium suavissimum*.

Heaths, Rhododendrons, and Roses.—A few very freely flowered Ericas were shown, the first prize for six varieties going to Mr. W. Long, who had *E. Cavendishiana* and *E. Lindleyana* in good condition. Mr. Cypher was second, and Mr. J. F. Mould third, while the winners with three varieties were Messrs. J. F. Mould and H. Jones; and with a single specimen Messrs. C. H. Keel and J. W. Durbin. Rhododendrons were well shown, and though not large proved very attractive, their value for pot culture being forcibly demonstrated. The prizewinners with groups of twelve plants were Messrs. A. A. Walters, J. Cooling & Sons, and W. C. Drummond; and the best sorts were Mrs. Holford, Lady Claremont, Blandyanum, Mrs. John Clutton, The Queen, Ellen Cook, Brilliant, Admiral White, George Palmer, Michael Waterer, *Prunifolia flore pleno*, *Peruginia*, and George Brown. Pot Roses made quite a display, and on the whole were shown very creditably. With nine plants Mr. J. F. Mould took the lead, the best of them being *Celine Forestier*, *Paul Verdier*, *Glory of Cheshunt*, *Abel Grand*, and *Madame Lacharme*. In the second-prize group, staged by Mr. J. E. Morris, gardener to R. B. Cater, Esq., Bath, there were also a few creditable specimens. The first prize for six varieties was awarded to S. P. Budd, Esq., Bath, who had medium-sized beautifully flowered specimens of *Teas Pauline Labonte*, *Safrano*, *Marie Van Houtte*, *Madame Willermoz*, *Catherine Mermet*, and *Clothilde*. Mr. A. W. Southard, gardener to F. J. Walker, Esq., was a good second, and Mr. A. Hawkins third.

Pelargoniums, Calceolarias, and Cinerarias.—The former were scarcely so good as usual, and not much can be said in favour of the Calceolarias and Cinerarias. With nine Pelargoniums Mr. G. Tucker was first, his group consisting of fairly large and very healthy examples of *Beauty of Kingston*, *Mary Mallett*, *Bothwell*, *Triomphe de St. Mande*, *Digby Grand*, *Elegance*, *Mons. Victor Lemoine*, and *Madame Place*. Mr. J. Cypher was a good second, having among others good plants of *Edward Perkins*, *Duchess of Edinburgh*, and *Triomphe de St. Mande*. The best six plants, consisting of

freely flowered Lady Blanche, Edward Perkins, Empress of Russia, Rob Roy, Duchess of Edinburgh, and Rose Celestial, were staged by Mr. W. J. Mould, the second prize going to Mr. W. F. Biggs, and the third to Mr. J. Gibbs. Classes were also provided for "Spotted Geraniums" and Fancy Pelargoniums, the former serving to mystify many who are and who are not acquainted with the modern classifications of this popular race of plants, and in these Mr. W. F. Biggs was the most successful. The prizewinners with Cinerarias were Messrs. W. Marchant, gardener to J. Murch, Esq., H. Pictor, and A. Hawkins; and with Calceolarias, Messrs. W. Marchant, G. Tucker, and W. Robinson, gardener to Sir Henry Lopes, Bart., were the most successful, the prizes going in the order named in each instance.

Cut Flowers.—Several excellent stands of Roses were in competition, and as usual with the visitors to the Bath meetings, proved exceptionally attractive. Mr. W. Taylor, gardener to S. P. Budd, Esq., secured the first prize for eighteen blooms, among these being very fine examples of Catherine Mermet, Countess of Pembroke, Pauline Labonte, Marie Van Houtte, Souvenir d'un Ami, and Souvenir d'Elise Vardon. Mr. Taylor, gardener to Jas. Chaffin, Esq., was a very close second, his blooms being perhaps scarcely forward enough, while those in the winning stand were rather too fully expanded. In the second-prize stand were lovely blooms of Teas Bouquet d'Or, Caroline Kuster, Isabella Sprunt, Catherine Mermet, Perle de Lyon, Niphotos, Anna Ollivier, and Souvenir de Madame Pernet. Mr. J. E. Morris was placed third, and Mr. J. Mattock, Oxford, also staged creditably. Messrs. Keynes, Williams, & Co., Salisbury, brought two stands of Teas not for competition, which were greatly admired. Among these were several large bunches of Niphotos, Souvenir de Paul Neyron, Madame Lambert, Perle des Jardins, Comtesse de Nadaillac, Catherine Mermet, and Ma Capucine, the latter being singularly beautiful in a bud state. Tulips were shown in good style by Messrs. F. Hooper and H. J. Hooper, while Messrs. F. Hooper, W. Meddick, and Geo. Meddick were the most successful exhibitors of Pansies. The best box of twenty-four varieties of cut flowers was staged by Mr. F. Perry, half the number being Orchid blooms. Mr. W. J. Meuld was a good second. There were several very tastefully arranged ep.agnes, the prizewinners being Messrs. E. T. Hill, E. S. Cole, gardener to W. Pethick, Esq., and J. Stapleton, gardener to H. Mardon, Esq. The first prize for a bouquet was awarded to Mr. S. Garraway, the second going to Mr. E. P. Cole for a lighter and more pleasing arrangement, and Mr. S. Wakeham was third.

Fruit and Vegetables.—Strawberries, Apples, and Pears were shown in fairly large numbers, and as a rule in excellent condition. With six pots of Strawberries Mr. W. Burridge was easily first, having a variety said to be Oscar, but resembling Marguerite, very fine. Mr. S. Wakeham was a good second with President, and Mr. J. Weston, gardener to the Rev. C. C. Layard, third. Mr. Burridge was also first for thirty fruit, staging Oscar in fine condition. Mr. W. Robinson was second and D. Williams third. Several dishes of Pears were shown, Mr. R. Hooper Taylor winning first prize with well-kept Beurré Rance, the second prize going to Mr. Burridge for Uvedale's St. Germain, while the prizewinners with Apples were Messrs. G. Garraway, A. W. Southard, and J. S. W. Bush. Nine classes were provided for vegetables, and the competition in every case was close. The best or presumably best collection of nine sorts was staged by Mr. T. Evry, the second prize going to Mr. J. Weston for an equally good lot, and Mr. Smith was third. The best vegetables, however, were to be seen in the class for six sorts, and here Messrs. J. Kitching, S. H. Richards, and G. Ricketts were successful. These exhibitors were successful in some of the other classes, as also were Messrs. G. Pymm, G. Wiltshire, H. Marchant, J. Curtis, H. Jones, J. Stuckey, H. Beavis, T. Mead, and W. W. Kettlewell.

Not for Competition.—Messrs. Cooling & Sons, Bath, arranged a very pretty group of plants in pots, which included Clematises in variety, Rhododendrons of sorts, Roses, conspicuous among which were several pretty single varieties, and various other popular kinds of plants grown and shown in their well-known excellent style.

CULTURE OF NEPENTHES.

NEPENTHES are curious but very interesting plants. They should be grown in baskets, as they show their pitchers more to advantage; in fact a great many of them could not be grown in pots, as some of them throw out the point of the leaf as long as 4 feet before forming the pitcher. Some of them are very easy to grow, and will do well hanging up in a plant stove, which makes the house look very effective. They require plenty of heat and moisture—that is to say, the temperature should not fall below 65° at this time of the year, and in the winter nights not below 60°. During the day the heat can be regulated according to the other plants in the house, as it will not hurt the Nepenthes on sunny days if the temperature should be 100°, or even more provided there is plenty of moisture. When dry the baskets must be taken carefully down and dipped in tepid water, also sprinkled with the syringe morning and evening, according to the state of the weather.

Nepenthes Mastersiana is a fine hybrid, which does well in a plant stove; it is a good grower, at the same time dwarf in habit. The pitchers are richly coloured, and I have seen them quite 8 inches in length and 2 in breadth, and would no doubt grow larger as the plant gains in strength. A little water should always be kept in the bottom of the pitcher, as if allowed to get dry they will soon perish. One great curiosity is the number of wasps which one pitcher will catch during the season. I have taken out as many as six dozen from one pitcher. I do not know what attracts them, but when they get just inside the pitcher they seem to be drawn down and drowned. Sometimes the plants will grow so strongly that they will cease to form pitchers; the only way then is to eat the plants down and propagate from them.

Propagation of Nepenthes.—Procure some good fibry peat and well beat it with a stick until all the fine portions are beaten out, pick out the fibre, use about the same quantity of chopped sphagnum, mix some sharp sand with it, break up some charcoal about the size of a hazel nut, mix it all well together, and it will do either for cuttings or established plants. Have some thumb pots half filled with the compost recommended. If I

wished to take the top of the plant I should leave three leaves on it, as it makes a plant much more quickly. At the bottom of the cutting an incision should be made crossways, as it roots more evenly; place a little sand at the base of each cutting, fill the pot nearly to the rim and press the soil firmly down, well water it before placing it in the propagating frame, where a bottom heat of 80° should be kept. The stem of the plant can be cut into several pieces about 1½ inch long, but it is best to have a leaf at the top where it can be done.

The frame should be opened in the morning for about an hour, and the cuttings syringed. In about six or seven weeks they will be rooted enough to put into baskets, care being taken not to disturb the roots while doing so.—A WORKER.

BROCCOLI.

AMONGST the many things which fidget a gardener, where the demand is heavy for winter and spring vegetables, is his Broccoli crop. Undoubtedly much depends upon the severity of the weather. Hence we can easily account for the abundant supplies of Broccoli that have and still are teeming into the markets this season. We have been cutting Broccoli here almost daily for the last six months. Veitch's Self-protecting was ready at the latter end of November, and was succeeded by Snow's Superb and Knight's Protecting. Snow's is a particular favourite, but we find it difficult to get true. Gilbert's Burghley Champion and Gordon's Niddric-Protecting have succeeded, the two latter varieties admirably; and for the month of May we could hardly desire a better variety than Lauder's Goshen. In passing I may state that our best heads of Broccoli have been cut from a break that has lain in Asparagus for the last twelve years, and during that time it has neither been dug nor trenched. The Asparagus was merely hard cut well on in the season, and all further growth kept under by the hoe. The plants were put in by means of the crowbar, and the weather being dry at the time we were obliged to fill up the holes with water; and we experienced some difficulty in getting sufficient loose soil to run in with the water to fill them up. The soil here is of a calcareous nature, rather light, hence our experience leads us to grow Broccoli on the firmest quarter available.—A. SMITH, Cardiff.

NICOTIANA AFFINIS.

THIS is a great favourite with many ladies, and deservedly so. It is easily grown, and will take care of itself where many other less useful plants would not. The way to grow it is to sow seed early in the spring, and when placed in a warm house the young plants soon appear, and require to be pricked off when they have made two or three good-sized leaves. For this purpose I prefer a frame, as if put in pots or boxes they are apt to get dry at a time when there are many other things wanting careful attention. They will grow in almost any soil, but a good rich loam produces the best flowers and plenty of clean foliage.

This plant is called a half-hardy annual, but I prefer not to plant it in the borders till all danger of frost is over, unless ample protection can be given. If wanted to flower early a few of the strongest plants can be potted. The way we manage is to select a few of the best as soon as up, and pot them at once, placing three in a 24-size pot, and grow them in a house devoted principally to early Peas and a few other choice vegetables till they begin to show the flower spikes. They are then removed to the conservatory, where they are not only very attractive, but the fragrance of the expanded flowers is much appreciated.

In the conservatory here there are now a few plants which seem to me to be worthy of a passing note. They were throwing up several spikes late last autumn, and knowing they would be greatly valued in December if they could be induced to flower then, I lifted them and planted them with a ball of soil in the conservatory. They were well watered in, and did not lose many leaves, but soon grew away among the Chrysanthemums and other plants, and gave us a nice lot of flowers at a time when they were much valued. They have been growing all the winter, and for the last three months have supplied many fine spikes of capital flowers. They are very useful for cutting for room-decoration. They are not injured by packing, as many flowers are, as they are folded up when they are cut early in the morning, and open in the evening when they are most wanted.

There are one or two other varieties worth growing, but I think none so good as *N. affinis*. I shall in future grow a few good pots, especially for winter and spring flowering, and would advise others to do so where sweet-scented flowers are valued.—G. M. W.

AMASONIA PUNICEA.

THIS is one of the distinct new plants which Messrs. Veitch & Sons (to whom we are indebted for the illustration) from time to time introduce to the public, and their description of it, as follows, appears to be very accurate:—

"This is unquestionably one of the most beautiful flowering shrubs that have been brought under the notice of horticulturists for many

years. It was introduced by us from British Guiana through our collector, Mr. David Burke. It is of direct habit, with elegant spreading foliage; the leaves are of elliptic-lanceolate form, from 9 to 10 inches long. The inflorescence is very brilliant, being particularly striking from having a series of the richest vermilion-crimson Poinsettia-like spreading bracts arranged in pairs along the entire length of the racemes, which are a foot long; these bracts, the lowermost of which are 4 inches long, are very persistent, remaining in perfection fully two months. From the base of

long-continued brightness and apparent easiness of culture, is likely to find its way into most gardens where stove decorative plants are grown.

MANCHESTER WHITSUNTIDE SHOW.

MAY 22ND TO 29TH.

THE horticultural metropolis of the north of England—Manchester, has during recent years obtained a most important position, and the exhibitions held there have taken rank amongst the leading events of the year.



Fig. 109.—AMASONIA PUNICEA.

each bract are produced pendulous tubulous flowers, in twos and threes, of a creamy white colour, offering a striking contrast to the rich colouring of the other parts of the inflorescence."

Two first-class certificates have been awarded to this plant—one last year by the Floral Committee of the Royal Horticultural Society, and the other last week at the Royal Botanic Society's Show at Regent's Park. Those honours sufficiently indicate the merit of the plant, which, by its

Especially is this the case as regards the annual floral festival in the Botanic Gardens at Old Trafford, which at Whitsuntide attracts so many exhibitors and visitors, and which is unsurpassed either in extent or beauty by any others in the kingdom. Several causes have tended to render these exhibitions so successful, and one of the principal is the enthusiasm that characterises the Lancashire horticulturists; this has induced an ardent but good-natured rivalry and desire to excel, which find an ample field for exercise in a competitive exhibition. There amateurs can test the beauty of their plants by a critical comparison with some of the

best in the land, and gardeners can, in the same way, prove their strength, or perhaps their weakness, by submitting their products to the judges' decisions. Another important matter which has contributed very largely to the success of the Manchester Exhibition is the substantial prizes offered and promptness with which these are paid at the conclusion of the show. Exhibiting involves considerable expense, and few can afford to wait for months, or perhaps a year, for a return of their outlay. Committees and secretaries of horticultural societies would do well to give more consideration to the quick payment of prize money than is usually the case, as when once a society's credit is established in this way there is no difficulty in obtaining a show. So many facilities are now afforded by the railway companies, and the conveyance of exhibits from one end of the kingdom to the other can be speedily and safely effected now where there is sufficient inducement to attract growers from a distance. An example of this was afforded at the Manchester Show by the appearance of Mr. Cypher's giant specimens after doing duty at Regent's Park two days before. On Wednesday afternoon they were being admired by visitors in the Royal Botanic Society's Show, London, and a few hours later they were being arranged in the exhibition house at Manchester, where, after their journey of over 300 miles—namely, from Cheltenham to London and thence to Manchester by the Midland railway, they looked as fresh as if they had been just brought from their Cheltenham home.

Every means has been adopted by the energetic and enterprising Curator, Mr. Bruce Findlay, to render the Show a success, and much praise is accorded to him for the highly satisfactory results obtained; and though more extensive exhibitions have been seen in the Old Trafford Gardens than that which opened on Friday last, it can safely be said that they never had a prettier or more diversified one. Much of the general effect of such a show is due to the method of arrangement, for however good the plants may be, considerable care is necessary to display them to the best advantage. This was admirably done at Manchester, and it was remarked by numbers who have visited most of the Whit-week shows that in the disposition of the productions of the present year it was equal to the finest of those held in previous seasons and superior to the majority. The conservatory or exhibition house was especially beautiful with its thousands of varied, bright, and curious Orchid flowers, and fine banks of Ferns, Palms, Cycads, and other foliage plants, with Mr. B. S. Williams' and other nurserymen's groups in the centre, from which arose numerous tall and graceful Tree Ferns—a most commendable improvement in the arrangement. Then there were the grand specimen stove and greenhouse plants from Cheltenham near the entrance, which attracted the attention of visitors immediately, and formed a group that could scarcely be surpassed, and one—the marvellous *Erica Cavendishiana*—has probably never been equalled. The enormous exhibition tent was devoted to the groups in competition, the Worcester Clematises, with specimen Azaleas and Pelargoniums, forming a grand bank at one end, facing them at the other end being the Bagshot Rhododendrons, while on each side were the competing groups. Viewed from the elevated path at one end near the Clematises the effect produced was charming in the extreme. A smaller tent was occupied with hardy herbaceous and Alpine plants, which, notwithstanding the lateness of the season, were very numerous and of good quality, Pelargoniums, Calceolarias, Pansies, miscellaneous exhibits, and the fruits. In the grounds horticultural builders exhibited a large number of houses and garden appliances, Messrs. Halliday & Co., Middleton, having a large number of frames and greenhouses.

ORCHIDS.—Several important exhibitors were absent from the Show this year; but though Mr. Percival's grand specimens were sadly missed, and one or two other contributors from the neighbourhood of Manchester were unable to bring their treasures, the display was a beautiful one, a magnificent bank of specimens being arranged upon each side of the conservatory. The Cattleyas from St. Albans constituted an important portion of the Exhibition, and with a number of fine *Odontoglossums* and a neat margin of *Adiantums* formed a most welcome group. The Handsworth collection was also one of the most important in regard to the variety and beauty of the varieties shown. In the competitors' classes, Cattleyas, *Dendrobiums*, *Lælias*, *Oncidiums*, and *Masdevallias* furnished the greater portion of colour, but the plants were mostly of moderate size, except Mr. Heine's *Dendrobium Paxtoni*, which was about 4 feet high and the same in diameter, bearing some hundreds of spikes of golden maroon-blotched flowers. *Lælia purpurata* from the same exhibitor, with a dozen spikes of four flowers each, was also very handsome, and *Dendrobium thyrsoiflorum*, from Mr. James Cypher, with three dozen long spikes, was greatly admired by the numerous visitors. *Dendrobium Devonianum*, with about sixty growths, from Mr. A. Heine; *Phalænopsis amabilis*, with forty or fifty spikes, from Dr. Ainsworth; *Dendrobium Wardianum*, with over fifty growths, from Mr. Heine; and a magnificent *Vanda teres* from Mr. Joseph Broome, bearing over forty spikes of two and three flowers each, were also notable specimens. All the plants were distinguished by a most healthy appearance, and the majority, even in the case of very small pieces, were flowering very abundantly.

Messrs. Fisher, Son, & Sibray, Handsworth, Sheffield, had a charming group of Orchids, which was backed with large specimens of *Paullinia thalictrifolia*, *Asparagus plumosus* and *tenuissimus* 6 feet high, globular in form, and 5 feet in diameter. Three tall specimens of *Vanda suavis* had two to four spikes each. A wonderfully fine variety of *Phalænopsis amabilis* with broad round petals attracted much attention, being one of the best in cultivation. The spike had ten flowers. *Lælia purpurata* with an extremely richly coloured lip, and *Oncidium Marshallianum* with unusually large and brightly coloured flowers, were also remarkable. Some handsome Cattleyas, *Masdevallias*, *Dendrobiums*, and *Cypripediums* were included in this group, which was margined with small plants of the neat white Azalea Mrs. Buist, alternately with *Adiantums*. Messrs. F. Sander and Co.'s group was chiefly composed of Cattleyas, representing many handsome varieties. *Masdevallias* and *Odontoglossums* were also well shown, and added much to the beauty of the collection.

In the class for nine Orchids A. Heine, Esq., Fallowfield (gardener, Mr. Craggs), was awarded chief honours for the fine *Dendrobium Devonianum* already mentioned; two handsome Cattleyas, *Mossia* and *Mendeli*, with thirty to forty flowers each; *Vanda suavis*, two fine spikes; *Dendrobium thyrsoiflorum*, with fourteen spikes; *Odontoglossum cirrhosum*, very beautiful with four panicles; and *Odontoglossum Alexandræ*, in a large pan, bearing over a dozen spikes. The second place was gained by Samuel S. Whalley,

Esq., Smallwood, Fallowfield (gardener, Mr. G. Jackson), who had *Dendrobium Paxtoni*, *Saccolabium præmorsum*, and *Lælia purpurata* in good condition. With smaller plants Dr. Ainsworth, Cliff Point, Higher Broughton (gardener, Mr. E. Mitchell), secured the third place, showing *Saccolabium præmorsum* and *Phalænopsis amabilis* very well. For six Orchids Dr. Ainsworth was, however, awarded the premier prize, staging the grand *Phalænopsis* mentioned above, with *Vanda suavis* bearing eight spikes, *Phalænopsis grandiflora* well flowered, and *Aerides Fieldingi* with four spikes. Following closely in this class John Heywood, Esq., The Grange, Stretford (gardener, Mr. Elphinstone), secured the second place with *Cypripedium purpuratum* bearing fifty flowers, *Cypripedium caudatum* with eight flowers, *Dendrobium thyrsoiflorum*, twelve spikes; *Lælia purpurata*, twelve flowers, and *Odontoglossum Roezlii* album with twenty flowers.

Two good collections were entered in the class for fifteen Orchids, Mr. A. Heine winning chief honours for large well-grown specimens, comprising the following:—*Dendrobium Dalhousianum*, bearing a dozen spikes; *Odontoglossum Alexandræ*, twenty-two spikes; *Cypripedium Lawrencianum*, thirty flowers; *Dendrobium thyrsoiflorum*, twenty spikes; *Oncidium sphacelatum*, eight large panicles; *Dendrobium Wardianum*, already mentioned; *Lælia purpurata* alba, fine; *Cattleya Mossiæ*, *Odontoglossum vexillarium*, and several others in superb condition. Joseph Broome, Esq. (gardener, Mr. H. Cole), was second with smaller, but choice plants, of which the *Vanda teres*, 4 feet high and nearly as much in diameter, was the most notable; *Dendrobiums*, *Vandas*, and *Cattleyas* constituting the chief portion of the collection.

With ten "bonâ fide" specimens Mr. Heine was again to the front, *Dendrobium Paxtoni* and *Lælia purpurata*, already mentioned, being his principal plants. Other good specimens were *Vanda tricolor formosa*, very handsome; *Calanthe veratrifolia*, seven spikes; *Dendrobium thyrsoiflorum*, seven spikes; *Vanda suavis*, two spikes; *Odontoglossum Halli*, two spikes of eighteen flowers each; *Cattleya Mossiæ aurantiaca*, and *Dendrobium nobile*. The second prize in this class was gained by Mr. J. Broome, who had chiefly *Dendrobiums*—namely, *D. pulchellum*, very pretty in a basket; *D. clavatum*, *D. Falconeri*, *D. nobile*, *D. thyrsoiflorum*, and *D. Wardianum*, with a good *Aerides Fieldingi*, *Cattleya Mossiæ*, *Lælia purpurata*, and *Cypripedium Stonei*. Mr. Heine had the best six Cattleyas, profusely flowered plants of *C. Mendeli* and *Mossiæ*, with large richly coloured flowers. Mr. J. Broome was second with *C. Skinneri*, very bright, and varieties of *C. Mossiæ*.

In the nurserymen's class for sixteen specimens Mr. James Cypher, Cheltenham, was the principal exhibitor, taking the premier prize with similar plants to those shown at the Regent's Park a few days before. The second place was secured by Mr. H. James for very healthy well-flowered plants of *Dendrobium thyrsoiflorum*, *Vanda suavis*, *Masdevallia Harryana*, *Cœlogyne Massangeana*, *Oncidium Marshallianum*, *Phalænopsis amabilis*, and *Dendrobium Jamesianum*. For ten Orchids the same exhibitors were placed in the same order, both contributing fine specimens.

For three *Vandas* Mr. A. Heine took the lead with *V. tricolor insignis*, bearing three fine spikes; *V. suavis Gottschalckii*, with two spikes; and *V. tricolor formosa* with the same number. Mr. S. Whalley followed with *V. suavis* varieties, and Mr. J. Broome with *V. suavis* and *V. teres*, the latter very good.

STOVE AND GREENHOUSE PLANTS.—The principal plants in the classes devoted to these were Mr. J. Cypher's magnificent specimens, which were in splendid condition. *Erica Cavendishiana*, 5 feet high and as much in diameter, was a mass of flowers, one of the grandest specimens that has ever been shown. *Erica depressa*, though smaller, was equally fine as regards the number of flowers and health. *Pimelea spectabilis* and *P. Hendersonii* were remarkable, and the other plants were the same as those at Regent's Park two days before. Mr. H. James was awarded the second prize for a most creditable collection, of which *Erica depressa* and *E. ventricosa magnifica* were the most notable; Mr. E. Tudgey being third with well-grown plants.

In the amateurs' class for eight plants, S. Schloss, Esq., Osborne Villa, Bowdon (gardener, Mr. C. Paul), secured the chief honours for some freely flowered Azaleas, a very handsome *Boronia elatior*, *Erica Victoria*, and *Dendrobium fimbriatum oculatum*. The second prize was gained by John Rylands, Esq., Longford Hall, Stretford (gardener, Mr. G. Smith), who had *Darwinia fuchsoides*, 8 feet high, and loaded with flowers, *Azalea Roi Leopold* beautifully flowered, *Ixoras Williamsi* and *Pilgrimi* in fine condition, and *Anthurium Andreanum* with six large spathes.

HEATHS.—For six greenhouse *Ericas*, distinct (nurserymen), Mr. James Cypher was first with splendidly grown specimens, particularly of *E. Cavendishiana*, *ventricosa magnifica*, and *tricolor Wilsonii*. The other varieties were *Lindleyana*, *depressa*, and *ventricosa coccinea minor*. Mr. E. Tudgey was second, among whose plants were excellent examples of *Victoria*, *affinis*, and *ventricosa tricolor*. In the corresponding class for amateurs Joseph Broome, Esq., Didsbury, was first; *Victoria* and *ventricosa coccinea minor* being particularly good, also *V. magnifica*; the second fell to Mr. Williams, 12, Church Street, Didsbury, whose best plant was *coccinea minor*.

AZALEAS.—In the amateurs' class for six distinct varieties Joseph Broome, Esq., was first; while James Brown, Esq., Heaton Mersey, and Mr. Smith followed in the order named. The premier plants were splendidly flowered, *Stella*, *Trotteriana*, *Criterion*, and *Madlle. Lefebvre* being especially fine; indeed, better examples it would be impossible to stage.

PELARGONIUMS.—In the nurserymen's class for eight Show varieties Mr. Chas. Ryland, Ormskirk, was the only exhibitor, staging in his usual style large well-grown plants, splendidly flowered, but in some instances rather backward. The most notable were *Gaiety*, *Royal Bride*, *Digby Grand*, and *Leopold*; the same grower taking the lead for eight Fancy Pelargoniums, which formed a most attractive series, *Sarah Turner*, *Evening Star*, *Lucy*, *Fanny Gair*, and *Advancer* being the best.

CLEMATISES.—The only collection was staged by Messrs. Richard Smith and Co., Worcester, to whom the first prize was awarded. The plants were well flowered, and formed a very imposing feature in the large tent. The most striking varieties were *Marie Lefebvre*, *Grand Duchess*, *Madame Van Houtte*, *Sensation*, *Lady Caroline Nevill*, *Purpurea elegans*, *Anderson Henry*, and *Gloire de St. Julien* (single-flowered), and *Lucie Lemoine* and *Countess of Lovelace* (double). This group well merited the honour bestowed.

FINE-FOLIAGE PLANTS.—Ten magnificent specimens gained Mr. John Rylands the first prize in the amateurs' class, the finest examples being *Cibotium regale*, *Latania borbonica*, *Alocasia Lowi*, *Pritchardia pacifica* of gigantic proportions, *Croton Williamsi* well coloured, and *Gleichenia rupestris*. Sir Wilfrid Lawson, Bart., was placed second with healthy plants of *Crotons*, *Cycads*, *Palms*, and *Dasyliroids*. E. Cliff Glover, Esq., Highfield Hall, Leek (gardener, Mr. C. Roberts), followed with very large *Palms*, *Cycads*, *Tree Ferns*, *Crotons*, and *Anthuriums*.

The chief nurserymen's collection of eight fine-foliage plants was that from Mr. J. Cypher, which included the giants that figured so prominently at the Regent's Park on Wednesday, and which appeared none the worse for their journey. Mr. H. James secured the second place with *Stevensonia grandiflora*, bearing three magnificent leaves nearly 6 feet in diameter. Several other *Palms* were also admirably represented. Mr. E. Tudgey followed with healthy plants. The best four *Palms* were from S. Baerleine, Esq., Didsbury (gardener, Mr. G. Williams), who had *Kentia australis*, *Geonoma Schottiana*, *Areca lutescens*, and *Cocos Weddelliana*. Sir Wilfrid Lawson, Bart., M.P. (gardener, Mr. Henwood), was second with *Acanthorhiza aculeata*, an uncommon *Palm* with deeply divided palmate leaves, *Areca Baueri*, *Phoenix rupicola*, and *Chamærops elegans*. With twelve *Dracenas* Messrs. R. P. Ker & Son, Aigburgh, won the first prize for grand plants of *Hendersoni*, *Amabilis*, *Gladstonei*, *Bausei*, *Lindeni*, *Baptisti*, *Wiesmanni*, *speciosa*, *Robinsoniana*, *Mooreana*, *nigrescens*, and *recurva*. Mr. H. James was second with healthy well-coloured plants of *Shepherdii elegantissima*, *Amabilis*, *Mooreanus*, *Gladstonei*, *Goldiana*, *Nycterinia*, *Youngi*, and *Regina*. Mr. A. G. Bruce, Charlton, was third with smaller plants.

FERNS.—The principal amateurs' class was that for eight *Ferns*, in which Mr Schloss won the leading prize with the grand specimens of *Gleichenias*, which have been repeatedly admired at Manchester. They are all in wonderful health, and the gigantic *G. Spelunca*, about 12 feet in diameter, is probably the finest plant in the country. *G. flabellata*, *G. rupestris*, *G. glaucescens*, and *G. Mendeli* were uncommonly fine. *Goniophlebium subauriculatum* was a handsome centre plant. R. P. Gill, Esq., Woodheys Hall, Ashton-on-Mersey (gardener, Mr. Plant), was a good second with *Adiantum Williamsi*, *Davallia Mooreana*, and *Dicksonia antarctica*, very fine amongst others.

HARDY FERNS.—For twelve distinct varieties Arthur Birley, Esq., Pendlebury, was first with a very beautiful collection, the most conspicuous of which were *Athyrium Felix-fœmina plumosum*, *A. F.-f. stipitum*, *A. F.-f. Craigii*, *Polystichum aculeatum plumosum*, and *Osmunda gracilis*. In the class for nurserymen Messrs. W. & J. Birkenhead took the lead with handsome examples, including *Osmunda gracilis*, very fine; *Adiantum pedatum*, *Dennstædia punctiloba*, *Polystichum Braunii*, and *P. angulare plumosum*; Mr. Rylands being second, and Messrs. W. & F. Stansfield third, each lot being very creditable.

CROTONS.—Very handsome were the ten specimens with which Messrs. R. P. Ker & Sons, Liverpool, gained premier honours, the plants being 4 to 6 feet high and as much in diameter, the foliage grandly coloured, and the plants clothed with leaves to the base. The varieties represented were *Carrierei* with narrow gold and green leaves; *Mortefontanensis*, red, gold, and green; *Hawkeri*, pale yellow and green; *Morti*, very handsome, with broad gold veins; *Evensianus*; *Countess*, with narrow dark green leaves, mottled and striped with gold; *Disraeli*, *Bergmanni*, and *Baroness Rothschild*. In the amateurs' class for six specimens Sir Wilfrid Lawson secured the chief position with very richly coloured plants of *Williamsi*, *Rex*, *Earl of Derby*, *interruptus aureus*, and several seedlings. Mr. J. Broome was a good second, his plants being healthy and dark in colour, but not quite so bright as the first.

HARDY HERBACEOUS AND ALPINE PLANTS.—These plants formed a very effective and interesting part of the Exhibition, the number of classes being augmented. For the best collection of herbaceous, bulbous, and alpine plants (confined to nurserymen), Messrs. James Dickson & Sons, Newton Nurseries, Chester, were first with a large and very attractive group, prominent in which was their new *Narcissus Sir Watkin*, crowded pots of fine flowers; *N. Bulbocodium* was admirably shown, also *N. poeticus*. Among the other most conspicuous plants were *Lilium Hansonii*, *L. auratum*, *L. eximium*, *Tulipa fulgens*, *Cheiranthus alpinus*, *C. Marshalli*, *Spiræa Aruncus*, *Saxifraga Wallacei*, *Spiræa japonica*, *Delphiniums*, *Phloxes*, *Auricula Etna*, *Scilla campanulata* in variety, *Leucojum æstivum*. For sixty herbaceous and bulbous plants Mr. Thomas Walkden, Marsland Road, Sale, was first with a bright floriferous group, but was run closely by Messrs. James Dickson & Sons of Chester, who were second. In the premier collection the following plants were especially conspicuous:—*Trillium grandiflorum*, *Dodecatheon Meadia album*, *Gentiana acaulis* very fine, *Lilium auratum*, *testaceum*, *candidum*, and *croceum*, all well shown—indeed, the best features of the group; *Aquilegia glandulosa*, *Doronicum plantagineum excelsum*, *Saxifraga pyramidalis*, *Aster alpinus*, *Primula farinosa*, *Primula acaulis* double *Cloth of Gold*, *Polemonium reptans*, *Saxifraga Wallacei*, and *Trollius europæus* were similarly fine. Messrs. Dickson's collection included some excellent examples of culture and selection; prominent were strong potfuls of *Lilium Harrisii*, *L. auratum*, *Spiræa japonica*, *Aruncus*, and *palmata elegans*, *Delphinium Belladonna* and other varieties, *Narcissus Sir Watkin*, *Cypripedium Calceolus*, *Ranunculus aconitifolius* fl.-pl., *Tulipa fulgens*, *Trillium grandiflorum*, *Campanula glomerata*, *dahurica*, and *Van Houttei*, *Gladiolus The Bride*, *Narcissus biflorus*, *Pæonia tenuifolia* fl.-pl., *Narcissus poeticus ornatus*, *Trollius americanus*, *Tulipa retroflexa*, *Carnation Souvenir de la Malmaison*, and *Anthericum liliastrum*. In the class for forty Alpines, in or out of flower, Messrs. W. A. Stansfield of Sale were for some reason known only to the Judges placed first; the decision was questioned on all grounds, as there was nothing in the series staged of exceptional merit; not less than twenty-three of the plants had no flowers expanded. Messrs. James Dickson & Sons of Chester were placed second with a very bright and attractive group, all in flower but three, which most of the specimens were as usual in fine condition. As examples we may mention *Anthemis Aizoon*, *Campanula muralis*, *Antirrhinum asarina*, *Linaria pallida*, *Auricula President* and *Mercury*, *Polemonium reptans*, and *Phlox pilosa*. Other very showy plants were *Gentiana verna*, *Ranunculus aconitifolius*, *Erinus alpinus*, *Sedum Sieboldii variegatum*, *Saxifraga peltata*, and *Onosma taurica*. For twenty-four

Pyrethrums the first prize went to Mr. T. Walkden, Sale, the only collection staged, forming a very creditable lot. The best were *Haage et Schmidt*, *Solfaterre*, *Mont Blanc*, *Amethyst*, *J. N. Twerdy*, *La Vestale*, *niveum plenum*, and *Nancy*. In the amateurs' classes the premier collection of thirty border and bulbous plants was staged by Mr. Entwistle, and contained a most interesting and showy lot. Conspicuous were *Lilium croceum* and *dalmaticum*, *Thalictrum species*, *Cardamine pratensis* fl.-pl., *Caltha palustris* fl.-pl., *Geum aurantiacum*, *Dianthus petraeus*, and *Trillium grandiflorum*. In the class for thirty Alpines in or out of flower there were three lots staged, the first prize falling easily to Mr. Entwistle for a charming group, including several rare and many very pretty specimens. Special mention may be made of *Campanula abietina*, *Arnebia echioides*, *Campanula Portenschlagiana*, *Linum alpinum*, *Campanula thyrsoides*, *Bellium rotundifolium cœrulescens*, and *Sempervivum arachnoideum*. The second and third prizes fell to Mr. James Mellor, Didsbury, and Mr. Sargent, Temple Villa, Sale, in the order named. Mr. Mellor's collection was tastefully arranged and very attractive, including nice specimens of *Gentiana verna*, *Saxifraga Wallacei*, *S. atropurpurea*, *Valeriana dioica alba*, and *Silene maritima* fl.-pl. The third collection was also most creditable, but badly named. The labelling in Mr. Entwistle's groups was extremely neat and very accurate. In the class for twelve Alpines the same exhibitor was again to the front with a most beautiful selection, including *Alyssum alpestre* very fine, *Phyteuma comosa*—perhaps the finest plant ever staged in the country—*Anemone Pulsatilla*, *Campanula Warneri*, *Dianthus glacialis*, &c. The second prize was taken by Mr. Mellor with a good lot, and the third by Mr. Edmund Wright, Church View, Northenden, in whose collection was a good plant of *Saxifraga Macnabiana*. Hard by these collections were two very fine plants of the *Chatham Island Forget-me-not*, *Myosotidium nobile*, exhibited by Mr. Shortt, gardener to E. G. Loder, Esq., of Weedon, and to which a first-class certificate was awarded. Mr. Shortt evidently knows how to grow this rare plant, and we understand he has a very fine stock of it. A very fine pan of *Gentiana verna*, shown by the Botanical Society of Manchester, was also very attractive. For three pots of *Lilium auratum* Mr. W. Hayes, jun., Charlton House, Sale, was first with well-grown plants, dwarf, and very copiously flowered, indeed we have seldom seen finer.

PANSIES AND VIOLAS.—These were a very important feature in the Exhibition, most of the prizes being well contested, and many of the flowers being of almost exceptional merit. In the class for six Show Pansies in 8-inch pots, Mr. J. Blower of the Children's Hospital, Pendlebury, was an easy first, while Mr. T. Entwistle and Mr. George Wilkes, Heaton Bank, Cheadle, were second and third respectively. The premier collection included *Dr. Hardy*, *Alpha*, and *Cloth of Gold*, selfs; *Capt. Spiers* and *John Openshaw*, white grounds, and *C. Brooks*, yellow ground. For six Fancy Pansies in 8-inch pots Mr. Blower again took the lead with admirable pots, including *Mrs. Crawley*, *John Currie*, *Golddigger*, *Mrs. E. H. Wood*, *Champion*, and *Walter Shearer*. Mr. G. Sargent, Sale, was second with a very excellent lot, *Thomas Grainger*, *Mrs. Birkmyre*, and *Mrs. E. H. Wood* being particularly good. The third prize went to Mr. Entwistle. For six *Violas* Mr. Blower again gained premier position, as indeed they well merited it; the varieties were *Duchess of Sutherland*, *Acme*, *Pilrig Park*, *Archibald Grant*, *Countess of Kintore*, and *Queen of Yellows*. D. M'Clure, Esq., Heaton Mersey, and Mr. Entwistle were second and third respectively, the second collection being really fine, especially the pots of *Pilrig Park* and *Picturata*. In the nurserymen's classes for twenty 8-inch pots of Show Pansies the premier position was gained by Mr. E. Mellor, Chorlton-cum-Hardy, with a very excellent collection, even, of good size, and well flowered. The best of the selfs were *George Rudd*, rich yellow; *Blue Stone*, *Dr. Audrey*, and *Cloth of Gold*; other notable varieties were *Roebuck*, *Maggie*, *Mrs. Harvey*, and *Mrs. Felton*. The second and third prizes went to Mr. J. Heywood, Cheadle, and Mr. Wm. Sanders, Leek, in the order named. In the corresponding class for twenty Fancy varieties *Mrs. Mellor* again took the lead, but was very closely followed by Mr. Thos. Walkden, Sale; both these collections were magnificent, containing flowers of the first merit. The most conspicuous flowers in the leading batch were *Thomas Grainger*, *Countess of Home*, *White Lady*, *Nelly Moran*, *Queen of Yellows*, *Mrs. E. H. Wood*, *William Liney*, *Mrs. J. Taylor*, and *George Vair*. Mr. Walkden's collection included very fine pots of *Thalia*, *Victoria*, *Lady Falmouth*, *Lady Clark*, *Mrs. Wood*, *Mrs. Jameson*. In the class for twenty *Violas* in the same sized pots, Mr. John Haywood, Cheadle, was well to the front; Mr. Bruce, Chorlton, second; and Mr. E. Mellor, Chorlton, third. The first collection included excellent specimens of *Countess of Kintore*, *Sovereign*, *Beauty of Sale*, an excellent white; *Picturata*, *Mrs. Beatson*, *Pilrig Park*, one of the finest whites; *Spring Bedder*, a first-class yellow; *Alpha* and *Acme*.

PRIMULA SIEBOLDI VARIETIES.—An extra prize was awarded to Mr. G. Gaggie, Waterloo Nursery, Bury, for a very attractive series of new varieties of his own raising. The most noticeable were *Purity*, pure white; *Crimson King*, rich lake; *Victor*, deep pink, very large; *Brilliant*, bright crimson pink; *Novelty*, white, tinged with lilac, fringed margins; *Purple King*, flowers mauve purple, very free; *Princess Beatrice*, pure white, very large, with copiously fringed margins, and of excellent habit.

ROSES.—Amateurs' class.—For six specimens in pots Mr. J. Grier, gardener to James Brown, Esq., Heaton Mersey, was first with *Annie Wood*, *Marquise de Castellane*, and *Boule de Nieve*, *Niphotos*, *La France*, and *Comtesse de Serenye*. Second Mr. Elphinstone, gardener to John Heywood, Esq., Stretford, the best of which were *Duke of Edinburgh* and *Charles Lawson*. In the nurserymen's class for twenty in pots not more than 9 inches in diameter, the second prize was awarded to Mr. John Hooley, Stockport, the adjudicators not considering the collection worthy of higher honours. Nice specimens of the following were staged:—*Souvenir d'un Ami*, *Lady Cole*, *Général Jacqueminot*, and *Paul Neyron*. For a group of thirty *Roses*, the size of pot no object, the only exhibitors were Messrs. G. and W. Yates, Market Place, Manchester, to whom the second prize was awarded, the plants being rather weak. The best were *Prince Camille de Rohan*, *Madame Lacharme*, *Général Jacqueminot*, *Marquise de Castellane*, and *Magna Charta*.

GROUPS ARRANGED FOR EFFECT.—In the spacious exhibition tent the groups produced a most beautiful effect, and never have the competitors displayed their taste and skill to better advantage than on this occasion. It is true that some trifling defects were apparent, but the general style was so great an improvement upon the formal banks too frequently seen

that they deserved the greatest commendation. The surface was gracefully undulated with an undergrowth of small Ferns, Palms, and flowering plants from which arose taller Crotons, Dracenas, or other plants; but in several cases the exhibitors erred in rendering the centres too heavy and quite out of accordance with the surrounding portions of the group. Consistence of style is very important in any kind of grouping, and the effect of an otherwise excellent arrangement is often marred by want of attention to this matter. Messrs. Ker's group deservedly attracted much admiration both for the quality of the plants it contained and the graceful manner in which they were associated. Messrs. Birkenhead's group of Ferns was as graceful as usual, but perhaps it might have been improved by the addition of a few more plants, as it was not quite so full as last year. The amateurs' group, especially that from Mr. Smith, were equally tasteful.

Messrs. R. P. Ker & Son, Aigburth Nurseries, Liverpool, took the lead with a most effective and tastefully arranged group, occupying space not exceeding 30 feet by 15 feet. Maidenhair Ferns formed a groundwork dotted with Azaleas, Pelargoniums, brilliant Crotons, Palms, and margined with Selaginellas and Dactylis, relieved with Cordylines, Liliun candidum, and large Crotons, the centre well banked up to a large Palm. Messrs. W. & J. Birkenhead, Fern Nursery, Sale, received second honours for a very effective collection of Ferns; the groundwork was composed of a choice selection of tender and hardy Ferns, tastefully relieved with Dicksonias and Lomarias and fringed with small groups of choice Ferns and Selaginellas; the numerous examples of Lomarias, Blechnums, Adiantum pedatum, Polystichum, Osmundas, Cyrtomiums, various Lady Ferns, &c., well maintained Messrs. Birkenhead's fame as Fern-growers.

In the corresponding class for amateurs for a group occupying space not exceeding 25 feet by 12 feet, there were four competitors, the highest honours falling to Mr. Smith, Longford Hall Gardens, Stretford, for one of the finest groups we have seen; a groundwork of Adiantum gracillimum, A. cuneatum, &c., fringed with Panicum, Isolepis, and Selaginella, being most tastefully brightened with Dracenas, Azaleas, Gloxinias, Ericas, Richardia aethiopia, Coleuses, Ixoras, Impatiens Sultani, Odontoglossum vexillarium, &c.; the centre was a fine Palm, well dressed with Ferns and other pretty foliage plants, other smaller Palms similarly supplemented occupying suitable positions. Mr. Paul, Osborne Villa Gardens, Bowdon, was second with a very excellent group, but rather lacking colour. Some splendid examples of Anthurium Schertzerianum were conspicuous, and a charming margin was formed of Maidenhair Fern, Isolepis, and Caladium argyrites. Mr. Roberts, Highfield Hall Gardens, Leek, was third with a really good group, but rather too crowded. A lovely margin was formed of white and blue Forget-me-nots, Maidenhair Fern, and Isolepis, while the remaining prize went to Mr. Boardman, gardener to Mrs. Hodgkinson, High Lawn, Bowdon.

FRUIT.—There was not a large display of fruits, but they were good for the season and the competition was close. The only collection was that from Lord Carrington, Wycombe Abbey (gardener, Mr. G. T. Miles), who was awarded the first prize for neat bunches of Foster's Seedling and Black Hamburgh Grapes, the berries of the latter small, but well coloured. Black Circassian and Elton Cherries were fine. Brown Turkey Figs, ripe; Golden Gem and Scarlet Premier Melons, excellent; and a Pine Apple that was rather green near the crown. Eight collections of two bunches of black Grapes (all Black Hamburgh) were staged. J. F. Campbell, Esq., Woodseat, Uttoxeter (gardener, Mr. Hollingworth), was first with finely coloured bunches of moderate size. Thomas Slatter, Esq., Stand Hall, Whitfield (gardener, Mr. R. Johnson), and Mrs. Ackers, Moreton Hall, Congleton (gardener, Mr. W. C. Breese), were second and third, the berries in both cases being larger than the first, but not quite so well coloured. Seven competitors entered with white Grapes. Mr. G. T. Miles being first with Foster's Seedling, very fine. Mr. Breese took the second place with two small bunches of Duke of Buccleuch, the berries very irregular in size. Mr. Hollingworth was third with Foster's Seedling, large bunches, but small berries.

Pine Apples.—Mr. G. T. Miles was first with two Pine Apples, both Queens, weighing 4 lbs. and 4 lbs. 6 ozs. The Right Hon. Lord Penrhyn, Penrhyn Castle, Bangor (gardener Mr. Speed), was second with two good Smooth Cayennes; and C. E. Thornycroft, Esq., Crewe (gardener Mr. H. Harrison), third with Queens. Mr. Miles had the best single Pine, a Queen of 3 lbs. 11 ozs.; Mr. Speed being second with a large well-ripened Smooth Cayenne. The Hon. W. Magnell Ingram, Temple Newsome (gardener Mr. R. Dawes), The Earl of Ellesmere, Worsley Hall (gardener Mr. W. B. Upjohn), and A. T. Woodcock, Esq., The Elms, Wigan, (gardener Mr. P. Mottershead), were the prizetakers for twelve pots of Strawberries in the order named.

Extra prizes were awarded to Mr. Thornycroft for a dish of Elruge Nectarines; to Mr. Miles for dishes of Acme and Stamfordian Tomatoes, very fine fruits; and to Mr. W. Speed for a new white-flesh Melon of excellent flavour, named Penrhyn Seedling. It is of medium size with a plain unnetted yellow skin. A certificate was awarded for it. An extra prize was also awarded to G. B. Blair, Esq., Whalley Range, for six braces of Cucumbers, Telegraph and All the Year Round.

MISCELLANEOUS.—A handsome group of plants from Mr. B. S. Williams occupied considerable space in the conservatory, forming a bright and varied bank on the centre stage. Orchids were prominent amongst these plants, Cattleyas and Lælias of numerous varieties being shown in great numbers. Cattleya Mossiæ and Lælia purpurata were beautifully represented, other notable forms being Dendrobium Jamesianum, Masdevallia Harryana, purpurca and læta, the last a distinct rose-coloured variety with the points of the sepals incurved. Calanthe veratrifolia, Oncidium concolor, Odontoglossum Alexandræ, and Cypripedium Lawrencianum were all well shown with innumerable others. Of miscellaneous stove and greenhouse plants there was a fine selection, including Heaths, Azaleas, Pelargoniums, the white Volonté Nationale Album being fine amongst the latter, Amaryllises, Guelder Roses, Gardenias, with a due proportion of Ferns, Palms, Dracenas, and Crotons completed one of the most interesting collections of plants staged. From Messrs. P. Ker & Sons, Liverpool, came an effective group of Crotons and other fine-foliage plants, with Azaleas, Anthuriums, and the graceful Spiræa astilboides. A pretty specimen of the broad-leaved Lieuala grandis occupied the centre of the group, highly coloured examples of Croton Mortii, C. triumphans, and C. Hawkeri. A good pan of Selaginella grandis was notable for its healthy condition, the graceful Asparagus tenuissimus with Adiantums lightening the collection materially.

Messrs. W. & J. Birkenhead, Sale, Manchester, showed a pleasing group of choice Ferns, comprising a large number of species and varieties from their extensive collection, the bold Selaginella grandis being prominent amongst the others.

Messrs. Francis and Arthur Dickson & Sons, 103, Eastgate Street, Chester, had a handsome group of Crotons, Dracenas, Azaleas, and miscellaneous fine-foliage plants. Some of the most notable were Croton chrysophyllus, an elegant narrow gold and green-leaved variety; Pandanus graminifolius, with long narrow dark green grass-like leaves; Solanum hybridum variegatum, with neat white and green leaves, and Azalea Reine des Roses, with large bright rose-coloured flowers.

The Liverpool Horticultural Company exhibited a small but pretty group of Ferns, chiefly Adiantums, Pterises, and Aspleniums, but comprising several graceful varieties, also a number of Tree Ferns, Palms, Cycads, and miscellaneous plants.

Messrs. W. Cutbush & Son (Limited), Highgate, London, staged a most effective bank of stove and greenhouse plants, conspicuous in which were the Azaleas, with two varieties worked on the same stock. They were splendidly flowered, and the contrast between the varieties was very striking—as Prince Albert, white, above Prince Albert rosea. The other part of the group consisted of Ericas, Pimeleas, Azaleas, Boronia serrulata, Palms, Ferns, &c., with examples of their noted Milltrack Mushroom spawn. Mr. James Cypher staged a group of specimen stove and greenhouse plants, of which we may mention Francisca eximia, Pimelea Hendersoni, Bougainvillea glabra, Erica Cavendishiana, and for which a special prize was awarded. The bottom of the large tent with large banks at the sides was filled by Messrs. John Waterer & Son, Bagshot, Surrey, with evergreen Rhododendrons, Deutzia gracilis, Ghent Azaleas, &c.; a charming group of specimen Japanese Maples was an especial feature in this collection, several exquisite varieties being most tastefully arranged with Acer Negundo variegatum. Mr. John Howard, nurseryman, Cheadle, near Manchester, had a large circular group of admirably grown Rhododendrons in many sizes very effectively arranged just inside the large tent, the approaches to which were decorated by the same grower. Messrs. John Laing & Co., Forest Hill, London, staged eighteen plants and two stands of cut flowers of their noted Tuberous Begonias.

Mr. Frederick Perkins staged two fine plants of his new Pelargonium Volonté Nationale alba, to which a first-class certificate was awarded. The flowers are large, pure white, of excellent form and consistency, and is likely to become one of the most popular of all the white-flowered varieties.

The weather on Friday and Saturday proved very unfavourable, with frequent rain, but on Monday it was fine, and a large number of visitors assembled, no less than 18,000 passing the gates, nearly the largest total in one day that has ever been obtained in the Botanic Gardens.



AT a General Meeting of the Royal Horticultural Society held last Tuesday, Dr. Masters, F.R.S., in the chair, the following candidates were unanimously elected Fellows:—viz., Hen. S. Benjamin, Richard Berry, H. V. Dobson, G. W. Dray, R. S. Gowdie, A. Gravely, G. Hardy, P. Hayman, C. T. Ingram, Daniel Jacobs, Albert Lambert, Joseph Lambert, F. M. D. Lawrence, J. H. Lewis, Thos. Lidstone, G. Lillywhite, W. A. MacGregor, Mrs. A. J. MacGregor, C. F. Matier, Mrs. Nelson, T. Radford, W. F. Reynolds, Mrs. Barnard Smith, Mrs. R. Murray Smith, Capt. F. Courtenay Terry, W. Thompson, W. Williams, Thos. Willis, A. W. Wills.

— WELCOME showers have fallen during the past few days in the neighbourhood of the metropolis, and there is a slight and much-needed rise in temperature. It still, however, remains abnormally low, and vegetation is consequently unusually late. Frosts have been of nightly occurrence, and in some districts have injured the fruit crops and cut down Potatoes.

— WE have to record the DEATH OF MR. JAMES DREWITT, which occurred at Kingston-on-Thames on the 14th inst. (where for the last seven years he had lived in retirement with his brother) at the ripe old age of eighty-five. He carried his age wonderfully well, and up to a few weeks before his death he took his daily long walks in the neighbourhood with the firm step of a man much less advanced in years, and indicative of a life carefully and well spent. He retained his faculties to the end, and passed peacefully away, highly honoured and much respected. For twenty-five years the deceased was in charge of the gardens of G. Cubitt, Esq., at Denbies, near Dorking, retiring from them about eleven years ago on a comfortable stipend from his late employer. Mr. Drewitt was a fine old English gardener, and in every way a most estimable man.

— MR. MAJOR'S INDIAN RHODODENDRONS have been very fine this spring at Cromwell House, Croydon. We saw the other day a noble plant of R. Dalhousæ bearing fully a thousand flowers, pale yellow

at first, bleaching to white, and several others have been similarly effective. Many Cactuses were also producing their gorgeous flowers, including some seedlings of the *Phyllocactus* section extremely rich in colour, crimson suffused with purple, and there are more to expand. In a pan elevated over a water tank in the greenhouse an unusually fine mass of the lovely miniature *Sibthorpia europæa variegata* arrests attention. It is covered with a multitude of flowers. Their beauty, however, cannot be seen without the aid of a magnifying glass. The whole of Mr. Major's plants are now in excellent condition.

— As may be seen in our advertising columns, the Hon. and Rev. J. T. Boscawen has been enabled to considerably enhance the prizes for Orchids and fruit at the Bath and West of England Show, which opens at Brighton on June 8th. A cup or money, value £15, will be given for the best group of Orchids, and a second prize of £5. A cup or money, value £5, will also be given for the best collection of fruit, and prizes of £3, £2, and £1 for baskets of thirty-six Strawberries in two varieties.

— HOLIDAY VISITORS.—It is estimated that close on 50,000 persons visited Kew Gardens on Whit-Monday. Hampton Court was visited by about 30,000 people. The Chestnut avenue in Bushy Park, which always attracts so many visitors at this season of the year, is now in its full beauty. Some of the trees are backward, the result of the unfavourable weather of the past few weeks, but on the whole the show of blooms is a grand one. The Hawthorns also are bursting into blossom, and adding to the floral display of the Park. The visitors to the Inventions Exhibition on the same day numbered 73,684, and upwards of 53,000 persons attended the Crystal Palace.

— In reference to the use of BONE MEAL a correspondent writes:—"When bone meal is added to soil the potash present in the soil commences to act upon it, and slowly to replace the lime in the bone, thus liberating phosphoric acid, which is a valuable manure. This takes two or three years to accomplish. In order to accelerate the process, fill a tub nearly full of bones, say the ordinary bones from the family. Place a layer of wood ashes 3 inches deep on the top of the bones, allow the tub to stand out in the weather for a year, or until the bones are soft, then mash them up and use them dry for potting plants or dressing lawns, &c."

— MR. RICHARD MORSE, Cotham House Gardens, Bristol, sends us a Mushroom of an abnormal but not particularly unusual character, as we have often seen one inversed and growing in that way on the top of another. The union is the result of a detachment of a small example in an overcrowded mass, which receives nourishment through the one on which it rests and adheres. Our correspondent goes on to say that "In October last he made up a bed in the middle of the kitchen garden on the 'Mushrooms for the Million' system. During the winter he gathered several dishes from it. A fortnight ago, wanting the piece of ground that it stood upon, he was about to destroy it, but upon uncovering it found it one mass of spawn and small Mushrooms. It was carefully removed and placed at the foot of a high wall with a north-west aspect, beaten firm, and covered with straw, and Mushrooms are now coming pretty freely.

— THE death is announced of MR. WILLIAM JAMES EPPS of Somerley View, Ringwood, which happened on the 18th inst., in the sixty-eighth year of his age. Mr. Epps was formerly a nurseryman at Maidstone, where he had a considerable reputation as a cultivator of plants. He was originally a traveller and clerk in the Maidstone Brewery, but having a strong passion for plants he devoted all his spare time to their cultivation. He was one of the earliest raisers of Fuchsias, and shortly after Mr. Standish raised his seedling *Standishi*, Mr. Epps was successful in raising *Fuchsia Eppi*, both of which enjoyed a wide reputation. Mr. Epps' success in raising this plant encouraged him in floriculture, and he eventually relinquished his engagement in the brewery, and devoted himself exclusively to the cultivation of plants. In this occupation he was for a considerable time eminently successful, and especially in the growth of Cape Heaths, which he did so well that for some years he was a successful exhibitor at the shows at Chiswick Gardens and other metropolitan exhibitions. Mr. Epps was successful for some years, but from a combination of circumstances he was forced to abandon his business at Maidstone, and for several years past he has been engaged in supplying soils, peat, and sand to plant-growers. So recently as the late Orchid Conference he was at the conservatory, South Kensington, with a collection of various soils which he had on exhibition, and he was also present at the dinner which was subsequently held at the Albion Tavern.

— ROYAL METEOROLOGICAL SOCIETY.—The usual monthly meeting

of this Society was held on Wednesday evening, the 20th inst., Mr. R. H. Scott, F.R.S., President, in the chair. Dr. H. Dobell and Mr. J. N. Longden were elected Fellows of the Society. The following papers were read:—1, "The Temperature Zones of the Earth Considered in Relation to the Duration of the Hot, Temperate, and Cold Period, and to the effect of Temperature upon the Organic World," by Dr. W. Koppen, Hon.Mem.R.Met.Soc. 2, "Velocities of Winds and their Measurement," by Lieut.-Col. H. S. Knight, F.R.Met.Soc. The author, after describing the various ways of ascertaining the direction and velocity of the wind, makes several suggestions for the improvement of Robinson's anemometer. 3, "On the Equivalent of Beaufort's Scale in Absolute Velocity of Wind," by Dr. W. Koppen, Hon.Mem.R.Met.Soc. The author refers to Mr. C. Harding's paper read before the Society in December last on the anomalies in the various wind velocities given by different authors as equivalents for the numbers in Beaufort's Scale; and, as illustrating the point, calls special attention to the want of agreement between the velocities obtained by Mr. Scott and those subsequently obtained by Dr. Sprung, and confirmed by himself. 4, "Note on a Peculiar Form of Auroral Cloud Seen in Northamptonshire, March 1st, 1885," by the Rev. James Davis.

PRUNING DENDROBIUM NOBILE.

THE exhibition of the two magnificent plants of *Dendrobium nobile*—one at the meeting of the Royal Horticultural Society on April 21st, and the other at the late Orchid Conference by Mr. H. C. Prinsep, gardener to the Hon. Mrs. Portman, Buxted Park, Uckfield—to illustrate the effects of what has been termed the "pruning" system on this species, will be a sufficient apology for again referring to a subject which caused so much controversy in these columns last year. The accompanying engraving is a faithful representation of the specimen exhibited at the Society's meeting on the 21st ult., and which was carrying four dozen growths from 2 to 3 feet long, with 630 expanded flowers thereon. Not one of the pseudo-bulbs had entirely lost its leaves, the greater portion of them being furnished from base to apex with large healthy deep green foliage. In addition to the four dozen growths just mentioned there were about seven unripened pseudo-bulbs, which, owing to making their growth late, had not ripened sufficiently to flower this year. Here, then, we have with fifty-five pseudo bulbs, which Mr. Prinsep testifies to be the growth of last year, the four dozen being those of early, and the seven those of late, summer growth, grown without the assistance of the two-year-old pseudo-bulbs, or, to be more precise, without the aid of such of the pseudo-bulbs as have flowered, the latter being cut entirely away at the time of flowering, thus both making and flowering its pseudo-bulbs within a year—truly a great stride in advance of the orthodox plan.

Mr. Prinsep tells us (and we have reasons for believing his statements to be perfectly accurate) that having to supply his employers with abundance of cut flowers at and about Easter time, among which the flowers of *Dendrobium nobile* are in special request, he cuts away the pseudo-bulbs carrying blooms, often clearing off at one time the flowering bulbs of two or three plants, and thus leaves the latter without any pseudo-bulbs save such as were of late summer growth and had failed to flower, to render the support to the young growths the non-pruning advocates claim as essential.

The same course is pursued if the flowers are not wanted for cutting, the bulbs being removed immediately the flowers fade. Briefly Mr. Prinsep's method of culture is this: As soon as flowering is past all pseudo-bulbs that have flowered are removed, leaving only those of late growth, which in some cases do not number more than one or two, and in others none. The plants are placed in a high and moist temperature, ranging from not lower than 70° to upwards of 100° Fahrenheit. In this high temperature the plants revel, and by the end of August have growths from 2 to 3 feet long. From this time a course of hardening off commences, and finally the plants are placed in a cool vinery where no fire heat is applied except in severe weather. There they remain until the nodes begin to manifest signs of being fully developed, when they are introduced into heat to enable them to flower.

Nothing can demonstrate more truthfully the soundness of Mr. Prinsep's practice and evince greater evidence of his success than a glance at the engraving, which has been prepared from a photograph of one of these remarkable plants, and those who had the opportunity of seeing the plants exhibited at South Kensington must have felt convinced that it is quite possible to prune *Dendrobium nobile* with success. Orchidists of great experience like Mr. James O'Brien and many others who saw the plants at South Kensington all agreed that the pruning of this species had been attended with beneficial rather than injurious results.

Unquestionably there is a limit to which the system of pruning must be confined, but carried out under proper conditions it can be successfully accomplished. In the first place it would be extremely hazardous to cut away the old pseudo-bulbs on weakly-grown plants, but given thoroughly healthy and vigorous plants then the old growths may be safely and beneficially removed. Neither would it be safe to remove old bulbs of other species of *Dendrobium*, although, as in the case of *Dendrobium Wardianum* at Wortley, there are those who claim that pruning is beneficial. We hope another year that Mr. Simpson of Wortley may be induced to settle this vexed question by exhibiting his pruned specimen

of *D. Wardianum* at South Kensington, together with a few others who have succeeded with other species, and thus, like Mr. Prinsep, demonstrate to the Orchid-growing world the soundness of the practice.

Those who were interested in this matter and happened to visit the Conference had an opportunity of comparing the unpruned *D. nobile* from Chatsworth with Mr. Prinsep's "pruned" specimen. The Chatsworth plant was, indeed, a large one, but both in pseudo-bulbs and flowers there was a remarkable contrast between the two. Although the Chatsworth plant had a great number of old leafless and flowerless growths, which the non-pruning advocates assert are of so much value in acting as store-houses to supply the young growths, we failed to see the supposed benefits of leaving these useless and unsightly spent portions to not only disfigure, but also crowd out the young growths which need so much light and room

upon those who have not yet tried Mr. Prinsep's plan to do so on a single plant, and thus prove to their own satisfaction whether the practice is right or wrong. Let it be understood that our remarks are confined solely to *D. nobile*, and do not refer to any other species, although we do not see why the same plan should not be pursued with *D. chrysanthum* and *D. Pierardi*. This, however, is a problem which sooner or later will find a solution, and perhaps be of great benefit to Orchid growers.—A PRUNING ADVOCATE.

CHRYSANTHEMUMS.

THE plants intended for standards for decoration to branch naturally after the month of July, or for the production of exhibition blooms, will



Fig. 110.—DENDROBIUM NOBILE.

to make satisfactory pseudo-bulbs. In Mr. Prinsep's plants there were pseudo-bulbs of nearly treble the length laden with flowers from base to apex, and from which all spent bulbs had been removed before the non-flowering bulbs had advanced in growth more than a few inches, thus proving conclusively that the pruning away of old spent bulbs is a gain rather than a disadvantage.

It has been remarked by some that the high temperature employed by Mr. Prinsep during the growth of the plants has been the secret of success in producing such fine results, and not the mere pruning away of the old pseudo-bulbs alone. Even supposing that to be correct—and surely there is no difference between the practice of employing a higher temperature to start the Vine and stove plants generally into growth in early spring, and that of placing these Dendrobies in a similarly higher temperature to promote active and quick growth—there is nothing to prevent others from following the same plan.

The subject of pruning or non-pruning has not yet had a fair trial at the hands of the opponents of the system, and we would strongly urge

now be sturdy little specimens in 6-inch pots with from one to three or more shoots. If they have been carefully hardened they may now be placed into 10-inch pots, the size in which they will be flowered, and then stood outside in a sheltered position. It is well to place them where they can be protected for a time from cold winds, or where a little tiffany can be thrown over them in case of frost, which may yet occur. Press the soil firmly into the pots, the best compost being fibry loam, a small portion of decayed manure, one 6-inch potful of bonemeal, and the same quantity of soot to each barrowful of soil. Stakes must be placed to the plants as the operation of potting proceeds, and all young growths appearing at the axils of the leaves can be removed, but the leading shoots should not be stopped. Plants required for bushes that have been frequently pinched may be placed in the same size and stood out, allowing them to become established in the new soil before their shoots are again pinched. Careful watering must be practised until the roots are working freely in the new soil.

Pompons, and the smaller flowering section if ready, may also be

potted; but our earliest will not be ready before the end of the month, for we have only just stopped the shoots, and shall allow them to break again before they are potted. Later plants of these sections will be placed in 5 and 6-inch pots as soon as the whole of the large-flowering sections are in their largest pots. Another good batch of cuttings should be inserted of various kinds, and the plants grown on without stopping, while others may be pinched twice, and these will be found very serviceable for decoration. A batch of old stool plants should be placed outside in rich soil for supplying cuttings during the first week in August for flowering in 3 and 6-inch pots.—B. N.

INTERNATIONAL HORTICULTURAL EXHIBITION IN PARIS.

AN International Horticultural Exhibition is being held in Paris, extending from the 20th to 31st of this month, which, though not strictly international, reflects all the more credit on the efforts of our French brethren, seeing the great merit of this fine Exhibition is almost entirely due to themselves. With the exception of one or two exhibitors from Belgium, and one from Germany, no foreigners were present, and among these the English formed no exception. The Société Nationale et Centrale d'Horticulture de France are therefore to be congratulated upon the success of their own unaided efforts.

No place could be better chosen for the Exhibition than that in which it was held. This was in the Pavillon de la Ville and the grounds adjoining in the Champs Elysées, close by the Palais de l'Industrie. The Pavillon itself is a spacious apartment admirably adapted for the purpose, as its dimensions admit of the ground being laid out in curving walks and capacious flower beds on green turf. On entering the building the effect is very telling, the masses of colour being toned down by the undulating banks of green with which the sides are furnished. The first beds are filled with Azaleas from Ghent, and consist of the usual small well-flowered specimens with which most are familiar; the one on the right is furnished by M. Ad. d'Haene, and that on the left by M. A. Dallière. Then there is a bed of Calceolarias of a good dwarf strain and well marked, exhibited by M. Loise-Chauvière, and this is matched by a corresponding bed filled with Zonal and Ivy-leaved Pelargoniums by M. Ad. Foucard, of which the best that can be said is that they were "fair market stuff." Messrs. Thibaut et Keteleer of Sceaux had a bed of Caladiums, Japanese Maples, and Bromeliads, and corresponding with this on the left was a mass of Anthurium Schertzerianum exhibited by M. Bertrand, which called forth the admiration of all who saw it. It was remarkable, and deservedly obtained the *prix d'honneur* offered by Messrs. Vilmorin in this class. Between these two beds was an isolated object, which by its beauty could not fail to attract attention. This was a large mass of *Odontoglossum vexillarium*, exhibited by M. Bergman, gardener to Baron Alphonse de Rothschild at Ferrières. It was splendidly grown, and so full of bloom that we did not venture to undertake the task of counting the number of its flowers. From the same garden came a fine plant of *Vanda teres*. The other large beds which occupied the centre space were filled with Begonias by M. Cavaroc of Bièvres, with Rhododendrons by M. Honoré Defresne of Vitry, M. Moser of Versailles, and MM. Croux et fils of Vallée d'Aulnay. The two latter groups were very good, admirably grown and bloomed, reminding us more of what are exhibited from the Surrey nurseries than anything we have ever seen before on the Continent. There were among them all the familiar names which are met with in the Waterer and Standish strains, such as "The Queen," "Mrs. John Clutton," "Minnie," "Sophia Western," and "Perfection."

In one of the largest of the centre beds M. A. Truffaut of Versailles made a fine display of miscellaneous plants, composed of ornamental-foliaged plants, a large collection of well-grown Orchids, and an extensive and very interesting collection of Bromeliads. A bed of Crotons and Arads from MM. Chantrier Frères of Mortefontaine, and one of Arads and Bromeliads from M. David of Versailles completed the arrangement of the central beds. The whole of one side of the great pavilion was furnished by M. Chantin of Avenue de Chatillon, Paris, with large and well-grown specimens of Palms, Ferns, Cycads, and other ornamental-foliaged plants. In the recess beginning the other side there was a splendid group of Palms by M. Saison-Lierval, large, luxuriant, of a deep green colour, and showing superior cultivation. A large space further on was creditably filled by M. L. Dallée of Rue de Javel, Paris, which was more varied and better assorted than that of M. Chantin.

Another length of the same side was occupied by M. Louis Landry, Rue de la Glacière, Paris, with a lot similar to the former; but the most brilliant gem of the whole Exhibition was to be found at the end of this side. It was from the famed Garden of Ferrières, and for perfection of culture and beauty of grouping could not be surpassed. All looked fresh, bright, and luxuriant. The Crotons were especially good, the most striking varieties being Baron James de Rothschild, Andreanus, Albert Truffaut, Williamsi, Prince of Wales, Georges Lesueur, Disraeli, and a beautiful seedling with long narrow green leaves with porphyry red veins. Anthurium Warocqueanum was splendid, as was also *Medinilla magnifica*, but we have not space to mention all the well-grown specimens that formed this collection.

In a small recess close by were some bouquets—at least so they were called; size seemed to be their chief merit. Imagine a large Turnip or Mangold Wurtzel thickly stuck all over with White Lilac, Tea Roses, and Gardenias, and you have a good idea of the Parisian bouquet of the present day. One was a pillar 6 to 8 feet high with a spiral shaft formed of an alternate line of Roses and white satin about a foot wide, and the top ending in a Tam o' Shanter bonnet made of Roses and *Hoteia japonica*. Other bouquets there were—at least so they were called. One was a child's wheelbarrow made of bamboo cane filled with plants of La France Roses in full bloom.

The rest of the Exhibition was contained in a series of temporary structures covered with stout calico, which were erected in the grounds surrounding the pavilion. In one of them was housed a large number of well-grown half-specimens of *Azalea indica* from M. A. A. Peeters, of St. Gilles, Brussels; a splendid lot of *A. mollis* and *pontica* varieties from Croux et fils, and a similar lot from Moser of Versailles. In the same

annexe were the vegetable and salad plants, among which the most interesting and instructive was that of M. Vilmorin, Andrieux et Cie. of Paris. It consisted of about fifty varieties of Peas in pots, a complete assortment of Cos and Cabbage Lettuce, Spinach, Alpine Strawberries, Radishes, and Leeks. Of the latter the Monstrueux Carantan was the most remarkable for size; and a very creditable exhibition, both as regards quality and quantity, was made by M. A. Cusin, gardener to Dr. Beni Barde of Sceaux. The exhibition of vegetables was very extensive and very meritorious, but it is not necessary for us to enter into particulars of all the exhibits, except that we should specially mention the highly creditable exhibition of forced Strawberries in pots from M. Lherault of Argenteuil, to which was awarded the gold medal of the City of Paris. He also exhibited bundles of the Monstrous Asparagus for which he is so famed, and which, though marvellous to look at, suggests the sight of a pretty little mouth attempting to attack it. There were many exhibits of forced Strawberries, all of which were very creditable, but the generality of them were not set up with any great taste.

The structures set apart for the forced Roses were well filled, the space being laid out in beds and planted in masses graduated in height, the highest plants on standards forming the ridge, and the heights diminishing to the sides. The principal exhibitors are M. Charles Verdier, who is a large exhibitor, M. Rothberg of St. Denis, and M. Margottin père of Bourg-la-Reine. Rivalling M. Verdier we find M. Levêque et fils of Ivry with a collection equal in extent and quality.

Of fruit trees in pots some excellent examples were exhibited by M. E. Salomon of Thomery. The Grapes were very fine, as were also the Cherries, but we could not say much in favour of the Peaches. A very good collection of Grapes in pots was shown by M. Jules Margottin fils of Pierrefitte, near Paris. In this collection we remarked a variety called Gradiska, which seems to be well adapted for pot culture. It is a white Grape of ovate shape and appears to set well. At one end of this tent were two large banks of annuals and perennials shown by MM. Vilmorin Andrieux & Co., which formed quite a study in themselves. The same house contributed Calceolarias, double Cinerarias, and Petunias of very select strains.

In an annexe to the pavilion was a very extensive collection of Indian Azaleas exhibited by M. Royer Duval of Versailles. They were like the Belgian plants grown as "half specimens," and made a brilliant display. In the same compartment there were numerous well-grown plants of Clematis, but though well grown they could not compare with what is seen in our own exhibitions. They were shown by M. L. Christen of Versailles.

To give a detailed report of such an Exhibition as this would occupy more space than we have at our disposal, and as the exhibitors are not very well known in this country, a mere record of their names can have but little interest for our readers. The opening day of the Show reminded us of home experiences, for it rained in torrents, and the wind blew almost a hurricane, threatening the safety of the canvas-covered structures forming the annexes. The paths were inches deep in mud, but the activity of the management was equal to every emergency, and liberal supplies of good gravel soon made all right.

HANDLIGHTS.

PERHAPS there is no more useful appliance in a garden than handlights. They are indispensable for wintering Cauliflower plants Lettuces, indeed anything requiring slight protection from frost in the winter and spring, as well as sheltering plants in the quarter of the garden which necessitates the employment of something portable. They are also useful for sheltering plants of doubtful hardiness, and in summer after they have done duty in placing over plants raised from cuttings or

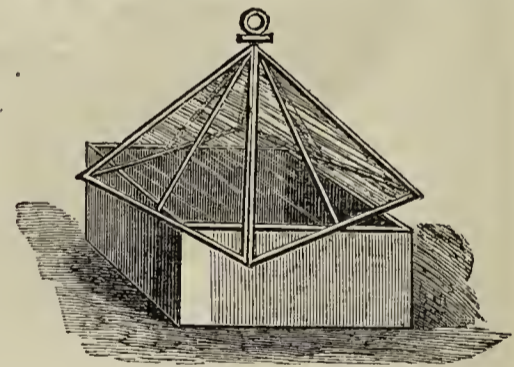


Fig. 111.

seeds, or for forwarding ridge Cucumbers or Vegetable Marrows, admirable for striking cuttings of Pinks, Carnations; indeed in every garden they are extremely useful, and never are long idle, as they serve so many essential purposes in plant-raising and forwarding.

They are not so much in use as their usefulness warrants, and that they are not so common as we might expect is probably due to their expense, as to secure them in iron frames, to say nothing of zinc or copper, they are rather expensive at first, and the breakage of glass in them is something fearful to contemplate; in fact, they are generally in such a plight for repairs that I do not wonder at their being relegated to such out-of-the-way places as we sometimes see them, as if owners were ashamed to use them. I do not know of anything in a garden that is so much neglected and so abused as handlights by the breakage of glass; even if the tops be crossed for ventilation the boot toe is often pushed through the upright glass at the sides. The first cost and the after cost in repairs caused me over a dozen years ago to have some made of wood instead of iron or other description of metal bars, using no glass at the sides, but having the roof of glass, and of that form admitting light from all points, and I have found them to answer admirably; the first cost not being great, and the breakage of glass is reduced to a minimum.

I have them made in two pieces, for I consider a moveable top is a great advantage, as ventilation is readily effected, and the plants are not subjected to cold air either directly over or driving full upon them sideways. The base or box is square, 2 feet every way, and 11 inches deep, a board of that breadth, and an inch thick. The outer edge of the upper rim of the box is chamfered off so as to give the needful rest for the top, and cause it to fit close. The top is hipped. The centre or ridge is made like a finial with knob for lifting the top or cover by, and into this the angle pieces are morticed and tenoned, and secured with screws,

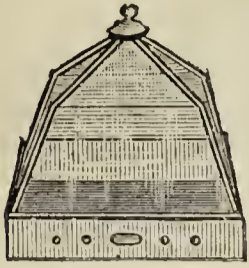


Fig. 112.

the angle pieces being ordinary $1\frac{1}{4}$ -inch sashbar, and the bars are 1 inch. The bottom rail is 3 inches by 1 inch, made so as to project over the sides of the box to throw off the wet, and are grooved half an inch from the edge on the under side. Eight squares of glass only bedded in, no top putty being used, and secured in position with copper tacks, complete the roof or cover. The glass is 21-oz. I first had the lights made with only four squares, each an equilateral triangle, but I found the panes get broken oftener than would probably be the case were a bar put up each; besides, a smaller size is less costly repaired than a larger one.

The appearance is good; indeed, they are ornamental rather than otherwise. Any carpenter can make them, or any handy man for that matter. I had twenty-four made this spring, glazed, painted three coats white lead for 10s. each.—G. ABBEY.

[Very useful protectors (figs. 111 and 112) of the same nature and price are made by Mr. Frazer of Norwich, and there is scarcely a garden in the land in which they would not be of great service for a variety of plants, crops, and propagating purposes.]

CRYSTAL PALACE SHOW.

MAY 22ND AND 23RD.

THE second of the series of shows arranged by the management of the Crystal Palace Company was held on the dates above named, and was unanimously declared to be one of the finest—if not the finest—ever held at the famous Palace of Sydenham. Both from its magnitude and from its general character this is admittedly "the Show of the season;" and the large number of visitors present amply testified to the wisdom of providing such a great display. The plants arranged in competition for the liberal assortment of prizes offered were good in quantity and in quality. They were arranged in the central transept of the Palace under canvas awnings, and some idea can be formed of the extent of the Show when it is stated that the exhibits extended almost from end to end of the magnificent promenade; while the large circular space at the foot of the orchestra stairs was also occupied. So much for quantity. As regards quality, it will suffice to allude to such renowned exhibitors as Messrs. Chapman, James, Rann, and Wakeham with stove and greenhouse plants; Turner with Azaleas, Pelargoniums, and Roses; Ford and Salter with Calceolarias; Paul with Roses; and Jackman with Clematises, to prove its general high character. A stage down the centre of the transept contained the majority of the exhibits, the larger specimens being very properly placed upon the floor. It will thus be seen that the plan adopted last year of holding the Show at the end of and in marquees outside the building, was departed from this year. Nevertheless, the result was satisfactory, and Mr. Head, the energetic master of the ceremonies, is to be congratulated upon having accomplished his task carefully and well, as also is the management on the undoubted success of the Show.

STOVE AND GREENHOUSE PLANTS.—As usual, the imposing specimens staged in the classes for stove and greenhouse plants formed a most striking feature of the Exhibition. Such splendid plants as these, immense in size, most profusely flowered, and beautifully trained, excite not only the admiration but the wonder of visitors. For nine specimens the first prize-winner of last year, Mr. Chapman, gardener to J. Spode, Esq., Hawkesyard Park, Rugeley, again secured premier honours with *Hedera tulipifera*, a magnificent plant covered with flowers and most skilfully trained; *Ixora Dixiana* and *coccinea*, *Tremandra ericæfolia*, *Dracophyllum gracile*, *Anthurium Schertzerianum*, *Erica depressa major*, *Chorozema Chandleri*, and *Aphelaxis grandiflora*. All were large, healthy, and well furnished with flowers, the last named being particularly noticeable. Mr. Henry James, Castle Nursery, Lower Norwood, was placed second with somewhat smaller but excellent specimens, of which the most notable were *Aphelaxis macrantha purpurea*, *Hedera tulipifera*, and a fine plant of *Azalea Model*. In the corresponding class for amateurs Mr. Chapman scored a still easier victory, a splendid plant of *Tremandra ericæfolia*, and large healthy specimens of *Aphelaxis* and *Ericas Cavendishiana* and *profusa*, mainly accounting for the fiat. Mr. Charles Rann, gardener to J. Warren, Esq., Handcross Park, Sussex, was second, showing good plants of *Azalea Princeess Alice*, *Cytisus Everestianus*, and *Tetratheca ericoides*. For one specimen stove plant in bloom Mr. Wakeham, gardener to H. Barrett, Esq., Menivel, North Dulwich, was placed first with a grand plant of *Clerodendron Balfourianum*, nearly 5 feet high and 4 feet through, covered with flowers. This was the only prize awarded. In the corresponding class for one greenhouse plant Mr. Rann was most deservedly awarded first prize for a magnificent globular specimen of *Genetyllis tulipifera*, most profusely flowered. A fine plant of *Azalea Duc de Nassau* won the second prize for Mr. Roach, gardener to R. Thornton, Esq., The Hoo, Sydenham Hill; and Mr. Penfold, gardener to the Rev. Canon Bridges, Beddington House, Beddington, was third with *Rhynchospermum jasminoides* in superior condition.

AZALEAS.—Large, handsome, and densely flowered plants of *Souvenir de Prince Albert*, *Reine des Belges*, *Gledstanesi Formosa*, *Magnet*, *Louis Von Baden*, *La Superbe*, *Model*, *Magnifica*, and *Her Majesty*, comprised the collection of Mr. Roach in the class for nine plants, and the first prize was deservedly accorded to him. Mr. C. Turner, Royal Nurseries, Slough, was

placed second, grand plants of *Duc de Nassau*, *A. Borsig*, *Etendard de Flandre*, *Criterion* and *Iveryana* being included in this group. Smaller, but still good plants, were shown by Mr. Henry James, who was placed third, and by Mr. J. F. Mould, nurseryman, Pewsey, Wilts, to whom an extra prize was awarded. For eighteen plants Mr. C. Turner was placed first with handsome plants of the best known varieties, Mr. Roach receiving second prize. One collection only was shown in the amateurs' class, and Mr. Roach was awarded the first prize for fine healthy specimens of *Criterion*, *crispiflora rosea*, *Iveryana*, *Magnifica*, *Duc de Brabant*, and *Donna Maria*.

ERICAS were represented by quality rather than by quantity, as but two collections were staged in the class for nine plants. Mr. Mould was placed first, and Mr. H. James second, the former showing large plants of *affinis*, *Queen Victoria*, *Kingscottiana*, *ventricosa coccinea minor*, *Lindleyana*, &c., well furnished with bloom. Mr. James's plants were, though equally large, less profusely flowered.

The redoubtable Geo. Jackman & Son, Woking Nursery, were unopposed in the class for twelve Clematises, but if their victory was easily won, it was none the less highly creditable. Their plants were never shown in better condition than at the Show under notice, and it is almost needless to say that the splendid plants with their immense blooms excited universal admiration.

FINE-FOLIAGED PLANTS.—These were well shown, and the stately plants provided a welcome relief to the blaze of colour afforded by the flowering specimens. In the principal class—that for nine plants—Mr. C. Rann was awarded first prize, showing grand specimens of *Alocasia metallica*, *Cycas revoluta*, *C. circinalis*, a magnificent plant; *Croton multicolor*, 5 feet across; *C. undulatum*, a very large and healthy plant; *Dieffenbachia illustris*, *Spathiphyllum pictum*, &c. Mr. Penfold secured the second prize, healthy and large plants of *Alocasia macrorrhiza variegata*, *Anthurium crystallinum*, *Asparagus plumosus* 4 feet across, and *Carludovica Drudei* 8 or 9 feet high, being the most notable plants shown by him. Mr. H. James was placed third, also showing good plants. In the class for amateurs Mr. Rann was again first, his collection including fine specimens of *Gleichenia Mendelli*, *Latania borbonica*, and *Croton princeps*. Mr. Penfold was awarded second prize. Mr. Rann scored his third victory, a very creditable result to him, in the class for a single plant with a very fine *Croton Hendersoni*, fully 5 feet across. Mr. J. Sharpe, gardener to F. Hatchett, Esq., Parkfield, Grove Park, Lee, S.E., was second with a good plant of *Gleichenia flabellata*, and Mr. Wakeham was third with *Dracæna regalis*.

FERNS.—Delightfully fresh and pleasing were the exhibits in the classes for Ferns. For nine plants Mr. Wakeham was to the fore with large and healthy specimens of *Dicksonia antarctica*, *Davallia Mooreana*, very fair; *Adiantum cardiochæna*, *A. formosum*, &c. Mr. H. James received second prize for good plants, including a *Dicksonia*, a very fine plant of *Blechnum intermedia*, *Neottopteris australasica*, and *Lomaria gibba*. No other groups were shown. In the amateurs' class Mr. Penfold was placed first, and Mr. G. Collins, gardener to J. S. Rose, Esq., Wandsworth Common, second.

ORCHIDS.—Mr. Hill, gardener to Henry Little, Esq., Hillingdon, near Uxbridge, secured the first prize in the class for nine Orchids. His collection consisted of *Dendrobium thyrsoflorum* with fourteen spikes, *Aerides Fieldingi* with five spikes of bloom, *Lycaste Skinneri*, *Cypripedium ciliolare*, *Odontoglossum Alexandræ roseum*, *Cattleya Mossiæ*, *Leopoldi*, *Mendelli*, and a variety of the latter with paler sepals and a clearly defined deep crimson lip. Mr. C. J. Salter, gardener to J. Southgate, Esq., Selborne, Streatham, was a very close second, a handsome plant of *Odontoglossum vexillarium*, *Cypripedium barbatum* with nineteen flowers, *Dendrobium Falconeri*, and a splendid *Cymbidium Lowianum* being the most noteworthy features of his collection. Mr. H. James was third, and also showed well. For a single specimen Mr. S. Cook, gardener to De B. Crawshay, Esq., Rosefield, Sevenoaks, was awarded first prize for a grand plant of *Vanda suavis* with four spikes of bloom. Mr. C. J. Salter was second with *Dendrobium Falconeri*, and Mr. J. Wakeham third with *Cattleya Mossiæ superba*. Mr. Cook was awarded first prize in the amateurs' class, *Vanda suavis*, *Cattleya Mossiæ*, and *Odontoglossum vexillarium* being his most noteworthy plants. Mr. Salter was second, and Mr. A. Luff, gardener to R. R. Hyatt, Esq., Leigham Court Road, Streatham, third. Three beautiful collections were exhibited in the class for a group of Orchids, and they were very greatly admired by the numerous visitors. Mr. Salter was distinctly first, his plants being charmingly arranged, and edged and interspersed with Ferns. Mr. James was second with a smaller but admirably arranged group, and Mr. Luff third.

CROTONS.—Three collections were shown in the principal class, Mr. Bird, gardener to A. Causton, Esq., Lodgemore, Alleyne Park, North Dulwich, was awarded first prize for large, healthy, and symmetrical specimens of *pictus*, *Andreanus*, *Weismanni*, *Evansianus*, *Disraeli*, *Williamsi*, *Queen Victoria*, *undulatus*, and *Prince of Wales*. Messrs. Hooper & Co. received second, and Mr. Mould third prize. In the amateurs' class Mr. Bird again secured premier honours with good plants, Mr. Wakeham being second.

DRACENAS.—Messrs. Hooper were awarded first prize in the principal class for these, large and vigorous plants of *recurva*, *voluta*, *Frazeri*, *amabilis*, *Gladstonei*, *Elizabethæ*, *Salmonei*, *imperialis*, and *Thomsoni* gaining them the verdict. Mr. H. James was a meritorious second, and Mr. Bird third. In the amateurs' class the last-named exhibitor was awarded first prize, Mr. Penfold being placed second, and Mr. Wakeham third. Competition was brisker in this than in the open classes, as two other groups were shown.

CALADIUMS.—Three competitors entered the lists in the principal class for these plants; Messrs. Laing & Co., Stanstead Park, Forest Hill, securing leading honours with fine large healthy plants. Mr. Sharp was awarded second prize, and Mr. Collins third, both showing remarkably well.

PELARGONIUMS.—These were well shown throughout, but two collections only were staged in the class for nine plants of the Show and Decorative type. Mr. C. Turner easily took first prize with splendid plants 3 feet across and very profusely flowered; *Kingston Beauty*, *Lady Isabel*, *Duchess of Bedford*, *Decorator*, *Prince Leopold*, and other well-known good sorts being staged. Mr. Wiggins, gardener to W. Clay, Esq., Grove Road, Kingston-on-Thames, was awarded second prize for smaller, but healthy well-flowered plants. Mr. Griffin, Gothic Lodge, Charles Street, Sydenham Hill, was

third. In the amateurs' class Mr. Hill was the only competitor, and was adjudged first prize. For nine Fancy Pelargoniums Mr. Turner was again first, grand plants of Fanny Gair, Princess of Teck, The Shah, Ellen Beck, Roi des Fantaisies, and others being noticeable. There was, however, no competition. Mr. Hill was again first amongst the amateurs; Mr. Griffin being second, and Mr. Wiggins third. For eighteen plants Messrs. Turner and Hill took second and third prizes respectively with very fine groups.

GLOXINIAS.—The competition for the prizes offered for Gloxinias was not very keen. Mr. W. Monk, gardener to W. N. Cheesman, Esq., The Hall, North Dulwich, scoring an easy victory in the open class. Bushy healthy plants with very large flowers of good colour placed him to the fore. Mr. Bird was a fair second, and Mr. G. Collins third. Messrs. Webster, gardener to Mrs. Croll, Mavis Bank, Grange Road, Upper Tooting; Monk, and Wakeham took first, second, and third prizes in the order they are named in the class for amateurs.

ROSES.—Very attractive were the Roses, and, as usual, they were viewed with considerable interest by the visitors. In the principal class—that for eighteen plants—three very handsome groups were shown. Mr. Turner was awarded the first prize, sturdy, healthy plants with large and richly coloured blooms being staged; Edward Morren, Juno, Celine Forestier, Thérèse Levet, Comtesse de Serenye, and Victor Verdier being specially noticeable. Messrs. Paul & Son were a good second, and Mr. W. Rumsey, Joyning's Nursery, Waltham Cross, third. But one collection was exhibited in the amateurs' class—that of Mr. P. Perry, gardener to G. Rowlett, Esq., Woodlands, Cheshunt. First prize was awarded.

CALCEOLARIAS.—There was little competition in the classes provided for these plants, but some excellent specimens were shown; Mr. Ford, gardener to J. C. Lanyon, Esq., Birdhurst, South Croydon, being awarded first prize in the open class. His plants were large and healthy, being evidently well grown. The flowers were of moderately large size, and exhibited a pleasing variety of colour. Mr. Salter was second, his plants being healthy but smaller, with finer blooms. The last-named exhibitor took first prize in the class for amateurs, Mr. Ford being second, so that their former position was reversed. Mr. J. Howe, gardener to Mrs. F. Bennett, Tulse Hill House, Upper Tulse Hill, was awarded third prize.

TABLE PLANTS.—As was the case last year, Messrs. Hooper & Co. secured premier honours for eighteen plants suitable for dinner-table decoration, their collection including Cocos Weddelliana, Pandanus Veitchii, Areca nobilis, Dracaenas Frederici, Sydneyi, and Bausei, Crotons undulatus, Evansianus, &c. Mr. Hudson, gardener to H. J. Atkinson, Esq., of Acton was a close second, and Messrs. Laing & Co. third. Two other collections were also shown.

GROUPS.—Two competitors only exhibited in this class—namely, Messrs. Laing & Co. and Mr. Luff, who received first and second prizes in the order named. Messrs. Laing's group was very judiciously arranged, Begonias, Heaths, Orchids, Lily of the Valley, Azaleas, and other flowering plants being interspersed to the requisite extent, and no more, with fine-foilage plants and Ferns. It was edged with *Isolepis gracilis* and Maiden-hair, and looked very bright and attractive. Too great a preponderance of foliage plants and Ferns detracted from the effect of Mr. Luff's otherwise handsome group.

NEPENTHES.—There was no competition in the class for these, but Mr. James exhibited some very fine plants, including Hookeri, Courtii, sanguinea, Mastersiana and hybrida, and was deservedly adjudged first prize.

TABLE DECORATIONS.—The cut flowers shown in the various classes for bouquets, vases, and bunches of cut flowers were quite the centre of attraction. Miss Bishop, Duppas Hill Lane, Croydon, was awarded first prize for a very tastefully arranged vase of flowers for the drawing-room; Mr. Chard, Floral Depot, Clapham Common, being second, and Mr. Lambert, gardener to H. W. Segelcke, Esq., Herne Hill, third. Misses Curd and Hassell, and Messrs. Hooper & Co., Chadwick, Gibson, Butcher, Hepburn, and Laing were awarded prizes in the classes for bridal bouquets, bunches of cut flowers, &c.

MISCELLANEOUS.—The exhibits staged, but not for competition, formed a notable feature of this Show. Messrs. Barr & Son, Covent Garden, showed a splendid collection of Daffodils, Irises, Ixias, and other bulbous flowers; Messrs. Wm. Paul & Son, Waltham Cross, showed boxes of charming cut Roses; Messrs. Carter & Co., High Holborn, sent good plants of *Spiraea palmata*, several baskets of Ruby and Queen's Prize Mimuluses, Phloxes, &c.; Mr. J. Vander Rees, Exotic Nursery, Tooting, showed an attractive collection of Alpine and rock plants, as also did Messrs. G. Paul and Son, The Old Nurseries, Cheshunt; Messrs. Geo. Jackman & Son sent a handsome collection of Roses in pots; and an excellent collection of cut and pot Roses also came from Mr. Rumsey. Messrs. Hooper & Co. showed a collection of Carnations containing some beautiful varieties. For all of these special prizes were awarded.

CERTIFICATED PLANTS.—First-class certificates were awarded to Mr. Laing for the following Begonias:—*Lady Hulse*, a very handsome double sulphur yellow with smooth broad petals; *Sir Peter Lumsden*, single, very large, massive, and rich; *Formosa*, double, or proliferous, the flowers being of a hose-in-hose character, growth pendant, and the plant admirably suited for baskets. Mr. Laing also received certificates for *Nepenthes Mastersiana* and a dark form of this fine Pitcher Plant; Mr. Perkins for the French decorative Pelargonium *Volonté Nationale* album, very floriferous; and Mr. J. Ford for *Calceolaria Golden Plush*, yellow with a velvety plush-like margin.

DEATH OF MR. GEORGE BAKER OF REIGATE.

THE National Rose Society has lost a Vice-President, a staunch supporter and first-class exhibitor, and Reigate one of its most revered and respected inhabitants.

Doubtless a fitting notice of him, and from a more practised pen, will appear in our Journal; but I desire, if it may be, to add my own pebble to the rising cairn of affectionate memories. Reigate has sustained no slight loss, and not least the local Rose Association, which he and other presidents have been raising to such a pitch of pre-eminence.

His writings in the "Rosarian's Year Book" will have endeared as well as introduced him to a still wider circle. Alas! those words of

matured wisdom and genial friendliness will be penned no more. The last issue has a most valuable article of his on pruning, ending with a touching premonition of what has actually happened. The "Year Book" of 1883 was enriched with his photograph, which will now be doubly precious to his many friends. As we gaze—

" . . . redivit os placitum, moresque benigni,
Et venit ante oculos, et pectore vivit imago."

"The kindly look of that expressive face,
The friendly grasp, and simple quiet grace.
While still we gaze mounts up before the eye,
And all the friend we mourn is once more nigh."

—A. C.

FULL of years—"like a shock of corn in full season"—esteemed by all, and greatly beloved in the narrower circle of his own kith and kin, there has just passed away from among us, in the person of my valued friend, one of whom it is not too much to say

"None knew him but to love him,
None heard him but to praise;"

while amongst those who loved the flower which was the study and delight of his life—the Rose—there will be felt that a gap has been made which it will be indeed difficult to fill.

In writing in the "Rosarian's Year Book" for the present year he closed his paper with these almost prophetic words: "I fear this paper may be considered rather of a discursive nature, and feel that I have much transgressed in exceeding the limits assigned to me in the pages of our 'Rosarian's Year Book,' yet it may be the 'last time I shall write.' Having witnessed the return of seventy-nine winters, it may well be supposed that the fire of life now burns so low that only the white embers of memory remain; still, the heart may be kept warm in the cheerfulness of those pleasures our gardens offer."

Gifted, as all must have seen who have read the papers with which he so kindly enriched the pages of the "Rosarian's Year Book," with an intellect of no ordinary character, largely endowed with that most excellent gift which does not always accompany intellect—common sense, and with the matured experience of a long life, he was one whose judgment might ever be relied upon; and many were the occasions on which, as Vice-President of the National Rose Society, these were placed at its disposal. His keen and accurate judgment, the transparent honesty of his opinions, and the moderation with which they were enforced, often decided matters of difficulty, and steered the Committee through stormy waters, and it will be difficult in future difficulties to find so wise and able a counsellor.

The Rose, in truth, was the one flower on which his affections were placed; other—indeed, all—flowers were admired, but the Rose was the queen to whom he gave his full allegiance, and in his scientific knowledge and practical treatment of it he was, in the highest sense, a true rosarian. He loved the flower for its own sake, and although a successful exhibitor he only regarded exhibitions as valuable for giving an impetus to its culture. No man cared less for its rewards, although I do think he was a little proud of being the winner of the National Rose Society's gold medal, and I have known him, when the exhibition day arrived, positively refuse to cut a bloom, which, it was suggested, would adorn his stand. "I can't; it looks so lovely there," and so it was left; and who ever went round his beautiful garden at Holmfels, where the Rose was grown as it is grown in few gardens, who did not feel that here was indeed a real gardener and a true lover of the queen of flowers? The plants were the perfection of health and vigour, and the sight one that few of us will forget.

And who that ever shared them can ever forget those seasons when, until the last two years, on the occasion of the Reigate Rose Show, he gathered round his hospitable board the lovers of his favourite flower? Who can ever forget his playful wit, his large-hearted hospitality, and his hearty words of welcome? They were, indeed, "*dies cretâ notandæ*" by all who participated in them. Concerning such a man it were idle to speak of his private work, for if a "Christian be the highest style of man," in our dear and valued friend that was to be found. The love of Christ was the moving principle of his life, and brightened his declining days. Without any affectation or cant it was easily seen that all his actions were influenced by it, and now he has entered into rest we shall all miss him. Those who knew him best will miss him most, as it may be said there remains the pleasant memory of his happy countenance and his genial manners, and that memory will ever be a fragrant one. His life has taught us much. May we be ready to receive its lessons!—D., Deal.

ROYAL HORTICULTURAL SOCIETY.

EXHIBITION OF ROSES, AZALEAS, &c.

MAY 26TH.

AN extremely gay and varied display was provided in the conservatory of the Royal Horticultural Society's Gardens on Tuesday last; indeed, for brilliance of colours it has not been surpassed this season. The side stages and a double centre stage extending the whole length of the building were filled with the groups of Roses, Pelargoniums, Clematises, Azaleas, hardy flowers, Orchids, Carnations, and other plants, all of which were arranged with excellent taste and produced a highly satisfactory effect. The large specimen Clematises from Woking; the Slough, Cheshunt, and Waltham Cross Roses; the Slough Pelargoniums, with the hardy plants from Tottenham, constituted the most imposing features of the display, and formed a welcome surprise for many of the thousands of visitors who passed through the conservatory during the day. Considerable regret was expressed that

such a beautiful exhibition should last for so short a time, and it was thought that two days might have been advantageously devoted to it. As the second of the special shows arranged for the season its success augurs well for those to follow.

ROSES.—A class was provided for these—eighteen plants, not less than twelve varieties, in pots not exceeding 9 inches in diameter, and in this there were three entries, the collection, together with the groups not in competition, constituting a very good representative display of Roses. Mr. Charles Turner won premier honours with a handsome collection of medium-sized plants, but exceedingly healthy, bearing well-developed foliage and substantial blooms, such as we are accustomed to see from the Slough nursery. The varieties shown had been carefully selected, and were consequently all good, but the following were particularly noteworthy for the number, size, and beauty of their blooms:—Edouard Morren, Star of Waltham, Mons. E. Y. Teas, Celine Forestier, Innocente Pirola, Camille Bernardin, Madame Gabriel Luizet, and Madame Lacharme. Messrs. Paul and Son, Cheshunt, followed closely with plants of similar size, compact in habit, and bearing fine flowers, especially Catherine Soupert, Marie Baumann, Marquise de St. Roman, and Madame Lacharme. Mr. W. Rumsey's, Waltham Cross, were rather smaller, but the blooms were good and the plants healthy.

ORCHIDS.—Substantial prizes were offered for nine Orchids in two classes, but they did not bring many competitors, only two entering the amateurs' class, and one in the nurserymen's. Of the former the best collection was that from De B. Crawshay, Esq., Rosefield, Sevenoaks (gardener, Mr. S. Cooke), who had some well-grown healthy specimens of *Cattleyas*, *C. Mossiae* and *C. Warneri* being very fine; the handsome *Cypripedium Lawrencianum*, the bright *Epidendrum vitellinum majus*, *Vanda suavis* with four spikes, *Odontoglossum vexillarium*, and *Lælia purpurata* alba were the other principal plants. H. Little, Esq., Hillingdon Place, Uxbridge, secured the second place with good examples of *Cattleyas Mendeli* and *Leopoldi*, *Dendrobium Dalhousianum*, *Cypripedium ciliolare*, and *Aerides Fieldingi* extremely beautiful, with five large spikes. Mr. H. James, Castle Nursery, Lower Norwood, had the only collection in the other class, and he gained the first prize with profusely flowered specimens of *Cattleya lobata*, eighteen flowers; *Odontoglossum polyanthum*, three long spikes; *Brassia verrucosa*, very handsome, with about twenty spikes, and forming a most striking central plant; *Odontoglossum citrosum*, and several other *Cattleyas* were also well represented.

AZALEAS.—Two classes were also devoted to these, but there was only one entry in that for nurserymen, Mr. C. Turner's fifteen beautiful specimens well deserving the first prize awarded to them. They were neat little specimens, semi-globular or pyramidal, covered in flowers and of most effective varieties, the most noticeable of which were the following:—Bernard Andreas alba, double white; Mrs. Turner, rosy pink and white; Jean Vervaene, crimson and pink; Flag of Truce, white; Mlle. M. Van Houtte, white and red; Duchesse de Nassau, crimson scarlet; Grandis, very deep red; Reine des Pays Bas, white and pink, pretty; Mad. C. Van Echaute, white; Princess Clotilde, double; and Apollo, white.

Messrs. G. Jackman's magnificent specimen *Clematises*, which we described in our report of the Regent's Park Show last week, gained this firm the premier award in the class for six *Clematises*, and in which no other competitor entered.

PELARGONIUMS.—The Slough Pelargoniums were in excellent condition, and secured the leading prizes in both the classes—namely, for twelve and eighteen plants. They were of the usual character from this establishment, free vigorous specimens splendidly flowered. Especially fine was Lady Carrington, its peculiarly soft tint being very pleasing. Other good varieties were Fanny Gair, Illuminator, Princess Teck, East Lynne, Prince Leopold, Ritualist, Amethyst, Kingston Beauty nearly 6 feet in diameter, Maid of Honour, and Claribel, all most effective exhibition plants. The eighteen comprised smaller but very beautiful plants. Duchess of Edinburgh, Maid of Kent, and similar decorative varieties were in admirable condition; less well-known forms being Madame Marie Knecht, white, very floriferous, and good, and Madame Albert Decairis, very distinct, the flowers having a light centre streaked, and a broad crimson margin.

CALCEOLARIAS.—The most prominent collections of these were the two brilliant groups of fifty plants in the nurserymen's class, which gained the prizes for Mr. James, Farnham Royal, Slough, and Messrs. J. Carter & Co., High Holborn, in that order. The Farnham plants were dwarf, compact specimens, bearing large handsomely coloured flowers, mostly selfs, of exceedingly rich shades, several being uncommonly brilliant. Messrs. Carter's *Calceolarias* were much more varied in colours and more useful for decorative purposes, the plants being compact, with healthy foliage; indeed they have never been better shown by this firm. In the amateurs' class for twelve plants, J. C. Lanyon, Esq., Birdhurst, South Croydon (gardener, Mr. Ford), and Mrs. Bennett, Tulse Hill House, Upper Tulse Hill (gardener, Mr. Howe), winning the first and second prizes respectively with freely flowered useful specimens.

For collections of cut blooms of hardy herbaceous plants, Messrs. Paul and Son, Cheshunt, and Thomas S. Ware, Tottenham, won the two leading prizes with choice assortments of flowers representing a great number of the most effective plants now in flower. Mr. H. Little had the only group of twelve *Amaryllises*, excellent in colour, but not remarkable for the form of their flowers. Mr. C. Turner staged the only group of Carnations, which proved one of the most pleasing exhibits in the Show; the varieties very very numerous, and the flowers fine. Several of the best were certificated, and are described at the end of this report. The Pansies from Messrs. H. J. & F. Hooper, Bath, and J. Forbes, Hawick, N.B., attracted much admiration, the flowers being large and varied in colour.

MISCELLANEOUS.—Several handsome groups were contributed by non-competing exhibitors, and added greatly to the beauty of the Show. Messrs. W. Paul & Son, Waltham Cross, were awarded a silver-gilt Banksian medal for a superb group of dwarf Roses in pots, distinguished by the healthy floriferous condition characteristic of the Waltham Cross plants. The chief varieties were Queen of Queens, Alfred Colomb, Capitaine Christy, Comtesse de Serenye, and Ulrich Brunner, fils. Ten boxes of handsome blooms were also staged. A silver Banksian medal was adjudged to Mr. B. S. Williams, Upper Holloway, for an extensive and effective group of stove and greenhouse plants, including a number of choice Orchids,

Ericas, *Amaryllises*, and numerous others. Mr. W. Rumsey, Waltham Cross, was awarded a bronze Banksian medal for a large group of dwarf and standard Roses in pots effectively arranged. Mr. T. S. Ware, Tottenham, contributed a highly interesting collection of hardy plants, in which dwarf Phloxes, Pæonies, and Polemoniums predominated. Of the last-named, *P. Richardsoni* (which was certificated) was particularly noteworthy, its large bluish-mauve flowers being very attractive. Messrs. Lane & Son, Berkhamstead, had a large group of hardy Azaleas and Roses, and Messrs. Kelway & Co. contributed collections of Pyrethrum and *Amaryllis* flowers.

SPECIAL PRIZES.—Messrs. Webber & Co., Covent Garden, offered three prizes for the best samples of Strawberries packed for market, which were won by Mr. J. Vert, Audley End Gardens, Saffron Walden; the Earl of Radnor (gardener Mr. S. Haines), and Hon. Col. W. P. Talbot (gardener Mr. C. Waite), all staging shallow boxes of fruits firmly packed in leaves, and there was little difference between them in the condition of the fruits. Messrs. Sutton & Sons' prizes for the best brace of Cucumbers, to include Sutton's Purley Park Hero or Sutton's Cluster, were won by Mr. S. Haines, Sir R. F. Sutton, Bart., Benham Park, Newbury (gardener Mr. C. Howe); and Mr. C. Waite, in that order, all showing good fruits. There were six entries. For the best brace of Melons, to include Sutton's Scarlet Invincible, Sutton's Masterpiece, or Sutton's Hero of Lockinge, Messrs. Sutton and Sons also offered three prizes, which were awarded to Mr. C. Herrin, Chalfont Park Gardens, Gerrard's Cross; Mr. C. Howe, and Mr. S. Haines, the first and last named varieties being those shown.

FRUIT COMMITTEE.—There were not many exhibits before this Committee, and their duties were soon performed. Mr. Howe, Benham Park Gardens, was awarded a vote of thanks for specimens of his new Cucumber, Benham Park Hero, a cross between Challenger and Telegraph, very even fruits of moderate size. A first-class certificate was awarded for Melon Benham Beauty, a green-flesh variety, with a smooth or slightly netted yellowish skin, and very deep well-flavoured flesh. Mr. Fyffe, Thames Ditton House Gardens, was also accorded a vote of thanks for Grapes Black Hamburg and Foster's Seedling, in good condition; also to Mr. Hudson, Gunnersbury, for Black Hamburg and Lady Downe's (last year) Grapes, the latter in excellent condition and bearing a dense bloom. Mr. T. Lyon, Sundridge Park Gardens, was awarded a cultural commendation for Brown Turkey Figs, very large and well ripened. Mr. Justus Corderoy, Blewberry, sent several dishes of a good late Apple, for which a letter of thanks was accorded; and Mr. C. Penfold, Leigh Park Gardens, Havant, sent a seedling green-flesh Melon, which was not, however, considered sufficiently distinct for an award. A cultural commendation was awarded to Messrs. W. & E. Wells, Croxby House, Hounslow (gardener, Mr. G. Thompson), for six pots of Strawberry Sir Charles Napier, bearing very fine and numerous fruits, also for a basket of large fruits of the same variety. Fine samples of Stott's Monarch Rhubarb were shown from the Society's Gardens at Chiswick.

FLORAL COMMITTEE.—Mr. C. Noble, Bagshot, exhibited a number of *Clematises* well flowered, and comprising some very fine varieties, one of which, Sir Joseph Hooker, was certificated. Pirate King, deep purple; Countess Gleichen, mauve white; Lord Beaconsfield, lilac mauve, very imposing; Lady Constance Kennedy, double white; and Mr. Gladstone, pale bluish mauve, very bold and handsome, were the principal varieties. Messrs. J. Veitch & Sons, Chelsea, showed a group of new plants, many of which were certificated, and are described under that head. In addition were flowers of *Cytisus elongatus*, white and yellow, very free; Lilac alba grandiflora, with extremely large substantial white flowers; and *Wistaria alba*, with white flowers. Mr. T. J. Siedel, Dresden, was awarded a vote of thanks for a hybrid *Rhododendron* named Koenigen Carola, a cross between Falconeri and hybridum album, bearing white pink-tinted bell-like flowers, very pretty and free. Mr. C. Kershaw sent specimens of his red-leaved Sycamore, which has been previously noted.

Messrs. Sander & Co., St. Albans, were awarded a vote of thanks for a handsome plant of *Aerides Ballantineana* with twelve spikes. Messrs. James Carter & Co. obtained a similar award for plants of *Mimulus Ruby*, Princess Beatrice, and others, representing a fine strain, which was commended; also for *Calceolaria Victor Hugo*, a rich ruby crimson-coloured variety. Mr. C. Turner had several fine Azaleas, the best being Memoir de L. Van Houtte, double crimson, very rich; Elise Lieben, white with pink streaks; and Baron de Rothschild, purple. C. L. Ingram, Esq., Elstead House, Godalming, showed several Orchids, *Cattleya Mendeli*, *Anguloa Ruckeri*, *Cattleya nobilior*, and *Cattleya Schofieldiana* being fine. Mr. James, Lower Norwood, was awarded a cultural commendation for a handsome plant of *Yucca filamentosa variegata* in flower, the spike being 6 feet high. A vote of thanks was also adjudged to Mr. Cummins, gardener to A. H. Smee, Esq., Wallington, for a plant of *Cattleya Mossiae Smeana*, with a golden throat to the lip, somewhat like aurantiaca. Mr. Stacey, Dunmow, exhibited a stand of his excellent *Verbenas*, which attracted much admiration, the flowers being very large and the colours wonderfully bright. The best of the varieties were as follows:—Purity, white; Ophelia, pink; Hamlet, scarlet; Striata, pink-and-white; Lord Brook, scarlet, with a white centre; Mabel, lilac blue; lilacina, pale lilac; and Fairy Queen, pink centre and light margin.

CERTIFICATED PLANTS.

Polemonium Richardsoni (Ware).—A very handsome form with lilac blue flowers, 1 inch in diameter, and most freely produced.

Dodecatheon splendidum (Ware).—Very beautiful, remarkable for the rich colour of the flowers—namely, a deep rose with a yellow ring.

Cattleya Schofieldiana (C. L. Ingram).—One of the *C. Leopoldi* type, with brownish green sepals and petals spotted with a darker colour, and a crimson lip covered with small projections.

Odontoglossum crispum lilacinum (Pollett).—A variety with well-formed flowers tinted purple and thickly spotted with chocolate.

O. crispum roseum punctatissimum (Pollett).—Tinged with rose and purple, with numerous small brown dots scattered over the flower.

Lobelia superba (G. Weedon, Ealing).—An effective variety, dark blue, with a white eye; strong, but compact and free.

Aerides Wilsoniana (Sander).—A white counterpart of *A. Ballantineana*, and equally fragrant.

Heliotrope Roi des Noirs (Veitch).—A magnificent dark purplish blue variety, with large flowers in dense heads, and extremely fragrant.

Gloxinia Flambeau (Veitch).—Flowers of medium size, but finely formed, very rich dark scarlet.

Tree Carnation, Pride of Peshurst (Veitch).—A very handsome yellow self, the blooms full and most abundant.

Phyllanthus Chantrieri (Veitch).—A native of the South Sea Islands, and somewhat resembling a large *Reedia glaucescens*, the leaves oval in form, with small reddish flowers from the axils.

Allium korataviense (Veitch).—A peculiar species with broad glaucous leaves and large dense globular heads of greenish white flowers.

Lilac Marie Legrange (Veitch).—A white variety with large flowers in fine trusses.

Hydrangea mandshuricus (Veitch).—A Japanese species with rosy lilac flowers of great size in huge heads.

Schizophragma hydrangeoides (Veitch).—Like an *Hydrangea* the outer flowers of the heads in this plant are petaloid and white, the inner ones being small and inconspicuous.

Olearia Gunni (Veitch).—A graceful New Zealand shrub, with numerous white star-like flowers scattered along the slender branches.

Clematis Sir Joseph Hooker (Noble).—An effective variety with double purplish blue flowers, very rich and full.

Tree Carnations T. W. Girdlestone, yellow, flaked with red; *Goliath*, flesh-tinted, flaked with scarlet; and *Colonel Cox*, very bright scarlet. All were from Mr. C. Turner, and equally fine varieties.

SCIENTIFIC COMMITTEE.—A. Grote, Esq., in the chair.

Lilac.—Col. Clarke exhibited a spray from a tree which he had cut deeply back, according to a practice adopted in Paris, so that the autumn shoot produced flowering wood for the next season. Dr. Lindley had thought that it could not be done in this climate. The bunch of flowers was not so large, but apparently of finer colour than ordinarily.

Lily of the Valley Diseased.—Specimens were received from Mr. G. Lee of Clevedon, apparently attacked by some fungus. They were referred to Mr. G. Murray for examination and report.

Acidium Grossulariæ.—Leaves of Currant and Gooseberry with large patches of this disease were sent by J. Cleland of Downpatrick.

Cucumbers Diseased.—Mr. J. Heptinstall sent some fruit showing gummy exudations. The cause was not apparent, and they were referred to Mr. Murray for examination. No fungus or insect was visible, and it was thought by some to be due to too much manure.

Lycoperdon sp.—A fine young specimen of a Puff-ball about 9 inches in height, was received from Mr. Grant of Christ Church, Hants. It was entrusted to Mr. Murray to name.

Saponaria ocymoides.—Mr. Loder exhibited specimens of varieties of this plant, which appeared to surpass in richness of colour the form known as "splendens;" he proposed to call it *atrococcinea* or *atro-rubens*; another variety he named *grandiflora*.

Fasciate Peduncles.—A *Narcissus*, with several flowers fused; a *Polyanthus* with a quadrate stem, due to the fusion of four peduncles; and *Primula obtusifolia* were exhibited by Mr. Smee, Col. Beddome, and Mr. Loder respectively.

Lilium longifolium, bulbiferous.—Mr. Wilson exhibited a stem which had borne aerial bulbs instead of flowers, and of which the bulbs had grown into shoots a foot or more in length while still upon the parent plant.

Morello Cherry, double.—He showed a spray of this variety. Some of the flowers had the two foliaceous carpels, similar to the common double Cherry; others had additional flower buds within the two carpels.

Dendrobium Wardianum, monstrous.—Dr. Masters exhibited blossoms with supernumerary labella, &c., upon which he will report.

Hellebores, hybrids.—Rev. G. Henslow exhibited branches from the same plant of *H. albidovirens*, described at the last meeting, and received from Mr. Ellacombe. One bore bright green foliage and pure white flowers; the serratures of the leaves being rather coarse. The other had purple flowers, and foliage of a purplish green, the serratures being finer than in the other. The specimens indicated a separation of the parental elements on distinct branches of the same plant, somewhat similar to the well-known case of *Cytisus Adami*.

Insectivorous plants in the open air.—Fine specimens of *Darlingtonia*, *Dionæa*, *Sarracenia purpurea*, and other species, as well as species of *Drosera*, were received from Miss Owen, Knockmullen, Gorey, Ireland, all of which were grown out of doors in small "bog beds;" the first three for one year, but the other for several years.

Strawberry, quinquefoliate Leaves of.—The Rev. G. Henslow exhibited specimens received from Mr. Lovell of Driffield. He also brought specimens of *Fragaria monophylla* (from the garden of the late Mr. Borrer) to show how the five-leaved form was derived from the monophyllous (which is characteristic of seedlings). Two basal lobes become detached from the single blade, and then two more from the basal lobes of the former. A similar process is characteristic of the Blackberry, but in the Raspberry both pairs of leaflets are successively taken from the terminal one. Mr. Dyer, in a notice of Duchesne's *Histoire Naturelle des Fraisières* (*Nature*, xxix., 215) alludes to the origin of *F. monophylla* and its retaining in the adult state the character of a seedling. He also showed specimens of transitional from simple to compound states in the leaves of *Rhus heterophylla*, *Ampelopsis Veitchii*, *Clematis cirrhosa*, and Elm.

Monstrosities.—The Rev. G. Henslow exhibited three blossoms of garden Anemone, in one of which the bracts of the involucre were sub-petaloid; in the other a supernumerary coloured leaf grew from within the involucre. A Passion Flower received from Mr. Pim with a sub-petaloid stigma, the rest of the flower being normal.

Clover Sickness.—Mr. Plowright sent the following with illustrations:—"The cause of this affection of Clover is but little understood. Possibly it may be induced by more than one cause, or rather that several diseases which cause injury to the Clover crop have been loosely called Clover sickness. Not the least important of these is due to presence of a parasitic *Peziza*, which at one period of its growth develops a sclerotium upon the roots of the Clover. Having been anxious for some time past to meet with this fungus, I have examined several plants from a field of Clover which is sick near King's Lynn, which were from time to time brought to me by my friend Mr. Thomas Brown. The only abnormality I can discover, however, consists in the presence of those little nodular enlargements upon the roots of the Clover which have been

so carefully investigated by Eriksson in his paper, 'Studies öfver Leguminosernas rotknölar.' The specimen sent herewith shows the condition which Eriksson describes. Each knot is about the size of a pin's head, of an oval form, rather soft internally, and attached by one end to one of the smaller roots. Similar bodies may not unfrequently be seen upon roots of the cultivated Pea and Bean. If a section be cut from one of these root knots from the Clover, and examined under a power of 4 or 500 diameters, it will be seen that the central part of the knot consists of a mass of cells full of granular contents. These granules escape when the cell wall is ruptured, and float about as a cloud of minute specks. The central part of the root knot is paler in colour and more transparent than the external enveloping tissue. The structure of the internal mass enclosed in the cells reminds one of plasmodiophora. I have been unable to observe the peculiar cruciate bodies which Eriksson figures t. iii., f. 40 and 41, as 'Corpora vibrorum smilia aut ramosa.'"

The Editor of the *Gardeners' Chronicle*, describing these tubercles on the Leguminosæ, alludes to Professor Frank's observations as follows:—"He was always able to distinguish two foreign elements—namely, undoubted slender threads or 'hyphæ' traversing the cell walls and cell cavities, and very small cell-like corpuscles, free from each other, and the protoplasm of the cells of the inner tissue, in which they are present in extraordinary numbers."—(*Gardeners' Chronicle*, 1879, vol. 2, pp. 112, 114, and vol. 12, 209.)

NICOTIANA HYBRID.—Rev. G. Henslow showed drawings of the hybrid raised by Colonel Clarke, and exhibited at the previous meeting. The pollen grains were spindle-shaped, with one to three grooves, colourless, and exhibited little or no change in water; in glycerine a small drop of granular fluid matter exuded. The grains did not give the appearance of health, and had hitherto proved ineffectual in producing good seeds.

LONDON'S LESSER OPEN SPACES: THEIR TREES AND PLANTS.

IN a phrase that is now familiar to all, whoever may have been the author, we call "the lungs of London"—those large open spaces in the midst of its busy and populous streets, such as parks and embankments, which tend to keep its atmosphere healthy not only by their vacancies, wherein the air has free circulation, but in another way as well. They have their trees and plants, cultivated or uncultivated, and these not only afford gratification and refreshment to the stroller, but in the course of their growth, while they absorb and fix carbon, liberate into the air a considerable amount of oxygen, so valuable to all animals. Also, at times it appears that where there are plants a certain proportion of ammonia is given off, which modern theorists believe to be salutary. Much has been written concerning the history and the horticulture of these open spaces. Besides these, however, there are other and smaller spaces which have their importance also as minor lungs of London, and performing a useful part. They are often of special value because they happen to be in the midst of a dense population, accessible to many who can but occasionally visit the parks of the metropolis, and by their shrubs or flowers they bring the country into town to the delight of young and old.

"Building," wrote Hine in 1832, "or what may more properly be called the tumbling-up of tumble-down houses, is so rapidly increasing about London that there will some day be scarcely a green spot for the resort of the inhabitants. Against covering of private ground in this way there is no resistance, but against its evil consequences to health some remedy should be provided by the setting apart of open spaces." Unhappily for us Londoners a full half century rolled by ere the "Metropolitan Public Garden, Boulevard, and Playground Association" came into being, and during this interval how much land has been allowed to be built over that ought, by authoritative interference, to have been kept open for the benefit of the inhabitants of the locality. Since its existence, this Association has done good work in securing some places from the attacks of the builder, in throwing open to the public others that had been long shut up, owing to adherents of "the dog in the manger" principle, and also in showing how such spots might be turned to the best account by the judicious planting of trees or shrubs, or occasionally by the cultivation of flowers. One direction in which this Association has worked specially is towards the utilisation of disused churchyards as recreation grounds for the living. There can be no objection to this, provided all interments have so long ceased as to render it certain or nearly so that no offensive gases are likely to rise from the soil; were it otherwise, a churchyard, however agreeably planted, may prove a garden of death to the living. Supposing, for the most part, that the soil in these remodelled churchyards is not interfered with it, would, I think, probably be rather favourable than otherwise for the culture of many plants, although some shrubs have been named as proving failures in churchyards where they had plenty of air and moisture.

Asking the reader, then, to be my companion while I glance at some of the smaller open spaces of London where a breath of fresh air and the sight of green leaves are attainable, we may notice first those that are in or near its busiest scenes, and which are, not a few of them, far better attended to than they were when this Journal came into existence, since which date horticulture has received a notable impetus. Also, we are now more learned in matters sanitary and hygienic—possibly even in danger of getting a trifle too "faddy," as the phrase is. It is, however, at present the fact that some of these oases in the desert of the metropolis are reserved for the privileged, and the general public can only look at them through railings or a brick wall—a state of things which calls for the action which the Association already referred to is endeavouring to exert. This happens to be the case just now at the time-honoured spot where the Tower overlooks the metropolis and the Thames, and which is not without its trees and even its flowers, growing in the precincts of the

citadel itself, or in the adjacent Trinity Square, and one might say flourishing on the whole in spite of London smoke, but they have the advantage of a somewhat elevated situation. And to the poor waifs of the Minories and Mint Street what a privilege it is to wander round Tower Hill and breathe a purer air, while they can behold trees and shrubs clad in the garb of spring!

For, whichever we accept of the many explanations offered of the name "London"—the two most probable being the "town of ships" or the "town of the lake"—there cannot be a doubt that the site of primitive London was on the rising ground below London Bridge, and which after the lapse of two millenniums still retains its elevation. Possibly the Romans had flower and fruit gardens upon its slopes, but concerning these history has nothing to tell. They enlarged the area of the city by draining off some of the marshes or fens, for when the Britons lived here unmolested London must at times have presented almost the appearance of an island, so much did the river broaden towards Surrey and Essex; and centuries later this city and its vicinity continued to be a first-rate place for horticulture, so numerous were its streamlets and springs. In Saxon and Norman times there were gardens near the Tower that have since been converted into streets, and a vineyard is mentioned by one author as yielding some seasons a good supply of Grapes within the precincts. "Savage Gardens" still exists as the name of a pile of buildings off Tower Hill, but if there are savages extant there (to speak allegorically) the gardens have certainly gone. And on the east side of the Tower was once a fine open space edged with trees—East Smithfield—i.e., "Smooth-field," now become a part of the Docks. The gardens which encompass the Tower, and which are formed from the old moat and the land above it that separated it from the roadway, date their history from 1843, when that insanitary and sluggish ditch was cleared, filled up, and gravelled or turfed. A variety of evergreens were planted, also some trees. Older trees there may have been that have died off, but I could not perceive any in the gardens that looked more than thirty or forty years old. These are disposed somewhat irregularly, though here and there forming small clumps, the Planes and Limes looking well, as they generally do even in the heart of London, especially the former, the Elms suffering from the atmosphere rather than from internal foes; some Ash trees also appeared to be sickly. Lilacs and Laburnums, if of stunted growth, were not deficient in leaves, but scant of flowers, for which, perhaps, judicious trimming would be serviceable. It seems to be commonly thought by those who plant these in our London gardens and squares that they can be left to themselves year after year. But not only do they require the shears, it is also necessary that the soil about them should be attended to. As the Oak is a tree that shows a strong aversion to smoke, it would be vain to seek for one within the Tower Gardens, appropriate as is the place to Britain's typical tree.

We note a curious instance here of partiality for the Elder, this species appearing again and again of varied size; in fact, upon the north side of the gardens there is a hedge consisting of Elder only. Was the planter of these touched with the superstitious regard for the Elder that was at one time prevalent? Concerning the flower beds in the Tower Gardens, it would scarcely be fair to give an opinion, as they were seemingly much in the condition they must have been through the winter, but no doubt in the summer some of them are planted out, and this cold May might justify keeping things away from the open ground. A few of the flowers of spring alternate with bunches of those melancholy-looking Flags, which were formerly so common in the little back gardens of London's main streets.

The beds, though not many or large, of Trinity Square close by show more care; here is about five acres of ground, the centre being grass; small beds are interspersed, some white with Saxifrages, others yellow with Crocuses and Lilies. The grass looks green and flourishing, albeit not free from Clover and Daisies. There are older trees here than in the opposite gardens, two large Planes attract special notice, which must have contemplated not a few changes in this part of London. Beside a Hawthorn hedge one notices scattered Hawthorns of some size and fantastic growth, which bid fair to live and grow for many years yet. Trinity Square, of course, was originally part of the large plot, curtailed even in the days of Stow, where London assembled in its thousands whenever some notable event occurred at the Tower, or upon Tower Hill. Here in 1551 the citizens are said to have raised a shout on one occasion which was heard at Charing Cross.—J. R. S. C.

SCARECROWS.

In "Notes and Gleanings" a few weeks since you noticed that a correspondent had mentioned a bird's nest that had been built in a hat that crowned a scarecrow. Such an incident, however, has often been mentioned before, and it is very decidedly eclipsed by the note mentioned by Captain Noble recently in the *Times*, that a sparrow had built her nest in a box intended to hold charges for firing attached to the gun—a 9-pounder—that is fired twice during the day at Woolwich. There was a hole in the box which was no longer used for the original purpose, and one day when fired a sparrow flew out. The box was examined, and found to contain a nest with five eggs in it. In due time the eggs were hatched, in spite of the regular firing.

Both these cases prove that birds may get accustomed to anything intended to frighten them, either by sight or hearing. The sharp boy who replied at the examination that if a gun were fired at five birds on a tree, killing three, none would be left on the tree, because "t'others would ha fled away," might possibly be wrong if the same two birds had been fired at and continually escaped, for in process of time they would decline

to take any notice of an explosion that never injured them. So it is with rooks. Half a dozen dead ones placed about a field newly sown have a decidedly deterrent effect at first; but in a few days the fear is gone, and the rooks take no further notice, feeding close to the so-called scarecrows.

Most persons living in the country have seen a wheat rick attacked by rooks, and it may be truly said taken by storm. The rick is black with the attacking birds; the ground for 50 yards is strewn with straws, the refuse of the depredations so deftly carried out by the attacking blacks. All around are to be seen rooks, some pulling out a straw, others flying off with the long streamer in their beaks; others, again, at a little distance, quietly sacking the ear of corn. It is a common practice in some parts of the country to push pieces of stick into such a rick, each stick having a piece of cloth attached to it. The effect is marvellous. The rooks cease their attack; but in a few days, seeing that the sticks remain as they were, and that no injury happens, the work of destruction is soon recommenced unless some alteration be made in the shape or position of the so-called scarecrow. This, one cannot but fancy, is a sort of reasoning on the part of the rooks; at least, it has very much that appearance, and though it may take longer time to educate other birds, yet it is probably the same with them. Rooks are knowing enough, and they belong to the birds that "walk," and I fancy I have a dim recollection that our friend, "Wiltshire Rector," once hazarded the opinion that birds which "walked" were wiser than those that "hopped." Be this as it may, it follows that if scarecrows are to be effectual they must really terrify the birds. This cannot be effected by any stationary apparatus, for it will soon prove unavailing. What, then, are the best scarecrows? I do not fancy many of us are prepared to follow a clerical friend of mine. He "preserves" his Strawberries twice—first by the stratagem I am going to mention, and secondly in the ordinary way of the kitchen fire. His plan is this:—On each side of his Strawberry bed he has an iron rod running along about an inch from the ground, and firmly fixed at each end. At one end there is a nice snug little water-tight house, a domicile for a cat, which, by the aid of a chain and ring, which runs along the iron rod, commands one side of the bed, and another on the other side completes the "scarecrow."

There is little doubt that birds are very decidedly careful about being entrapped by strings, and if a sufficient amount of this intertwining is carried on over Gooseberry and Currant bushes it will prove fairly successful; but as the fruit ripens the young growth has pushed out beyond it, and has most likely hidden the same; therefore, I think it would require repetition. Made-up figures, the ordinary form of scarecrows, are useful if every few days they are remade up, altered in appearance, and shifted in position. Strings with feathers need to be altered in position, and to be in greater number than is generally seen if they are to be successful; but if these two points are kept in mind they answer fairly well. So do bits of glass and tin tied to string, and so arranged as to touch each other when swayed by the wind. The "sweet music" that is "discoursed" by them has no great charm for the birds, and effects its object; but these, too, will answer better if their position be altered.

In dealing with birds there is no truer axiom than that "familiarity breeds contempt." Whatever they are familiar with they have ceased to fear; hence the secret of success is change, both as regards sights and sounds.—Y. B. A. Z.



KITCHEN GARDEN.

LATE PEAS.—A good batch of late Peas should now be sown—Laxton's Omega and Sutton's Latest of All are both excellent. Deeply trenched, heavily manured soil should be given them. The situation should neither be sheltered nor windy, but sunny and comfortable. As early Potatoes are dug from the borders the ground may have more manure if necessary, and be occupied with this crop. The rows may be from 6 feet to 9 feet apart; open them from 2 inches to 3 inches deep, and sow moderately thick. If the seed is good germination is sure to take place freely, and no extra covering apart from the ordinary soil need be used. Earth up and stake previously sown crops. Do not allow the stems to be blown over on any account. Take the points out of all that are in bloom and which are desired to pod as soon as possible. If rain has been as prevalent everywhere as it has been with us lately artificial watering will be quite unnecessary, but Peas in bloom or in pod should never be allowed to become very dry at the roots.

KIDNEY BEANS.—A large sowing of Runners should be made now. These will begin bearing in August, and continue until cut off by frost. There is no use in trying to grow them well in poor shallow soil. A row here and there in the garden generally succeeds better than putting them in close together, as when allowed to run up to their full height they shade each other, and interfere with fertility. Earth up and stake those sown some weeks ago. Clear out Dwarfs from under glass as soon as they have ceased to produce fruit. Canadian Wonder may now be sown largely. Allow 18 inches or 2 feet between the rows, and sow thinly.

Earth up the earliest rows of Dwarfs, and if they require protection support with Birch twigs, Spruce or Laurel branches.

VEGETABLE MARROWS.—The planting-out of these should be completed. Give them mounds of poor soil in warm sunny spots, and if the plants have not been properly hardened or are likely to be checked by unusually cold weather protect them at night with a handlight or a box or flower pot turned upside down. We have a number of boxes without top or bottom, about 1 foot square, and the same in depth, which we use for all plants of this kind when newly planted, and they answer admirably for keeping off the wind or rain, which would affect them injuriously.

THINNING VEGETABLES.—Beetroot, Turnips, Carrots, Parsnips, &c., are now growing very fast, and require weekly attention in the way of thinning. Good vegetables will never be secured where this is not attended to. They should all be thinned first as soon as they can be handled to 3 inches or 4 inches apart; and, secondly, when the leaves begin to meet in the rows at that distance, every alternate plant or more should be drawn away. We consider thinning our greatest help to perfect development.

PARSLEY.—This has germinated well, and the plants are now about 3 inches high from the first spring sowing. They are much too close, and must be thinned, but those drawn out will not be thrown away but planted elsewhere. Parsley is easily transplanted, and a first-rate plantation may be formed in the manner indicated. The ground for its reception should be deeply dug, well manured, and a quantity of soot or salt should be deeply dug in at the same time to keep away the grubs. The plants should be drawn carefully to preserve the roots, and be dibbled in rows 15 inches apart one way and 6 inches the other. Sow some soot on the top of the plants in the seed rows when it rains, and cut the tops off last year's plants before they bloom.

TURNIPS.—To have these really sweet and tender throughout the season they must be sown frequently in small quantities, but a larger sowing should be made now than has been done lately, as this will give the autumn supply. Veitch's Red Globe is the best to sow now; it remains long in prime condition, especially on deep rich soil. As Spinach, early Potatoes, and such like come off the ground, fill it with Turnips. Sow very thickly, and keep the rows 18 inches apart. Early Milan is our best Turnip just now. It is before all the others.

MUSHROOMS.—Our spring beds have done uncommonly well, but the credit is hardly ours, as we have given them no more attention than others in seasons when they did not bear half so long and heavily. One bed made up in a cool shed in a lean-to position against the wall about the middle of January began bearing before February was over, and it is still producing. It is quite three months since we gathered the first dish from it, and it speaks well for the cool system that they should continue so long; the bed would have been exhausted long ago in a warm house. Beds made up now will bear by the middle of July, and they should be placed in cool positions. Dry the manure to a moderate extent, make the bed very firm, spawn and soil over before the heat falls below 95°, and success is sure to follow. Where there are no suitable sheds put them under trees or against walls. They will almost grow anywhere, and should be tried by all.

LETTUCE.—Sow more seed of the summer varieties, and plant out from the previous sowings. Excellent Lettuces may be grown on Celery ridges, and it is rather strange that they should do better on these high and dry positions than on level cool soil. Those planted along the bottom of the wall in April are now turning in, and any which run to flower are cleared away at once to give place to other plants.

SPINACH.—The old winter crop has just been thrown away. It has been very useful and profitable of late. The soil it came from is now poor, and is being heavily manured for a crop of Veitch's Autumn Giant Cauliflower and the Self-protecting Broccoli, both of which should be planted now.

Plant out Brussels Sprouts, Savoys, Broccoli, and any kind of greens which are ready. Keep the Dutch hoe going amongst all growing crops, and give no quarter to weeds or spent and useless vegetables. Sow Radish and Mustard and Cress frequently, and clear off the remains of previous crops. Water newly put out plants if they require it, and do not stint them, as one good soaking is worth a dozen dribbles.

FRUIT FORCING.

VINES.—An acceptable change in the weather having at last set in growth in every department will now be rapid; hence, great vigilance and perseverance will be needed to keep the daily routine well in hand. Every effort must be made, as nothing shows neglect so soon as healthy Vines under the flush of spring growth.

Thinning.—Tedious as is the operation and the necessity of its being performed by careful painstaking hands, the work must not be allowed to give way to the most pressing demands in other departments. Early thinning of the berries is necessary to insure full support for those retained, thereby making sure of their swelling to a good size; and it is equally important that an early selection be made of the bunches that are to remain for the crop, removing all others, cropping lightly, as what is lost in number of bunches will be counterbalanced by the size of berry and the superior finish of the crop. Thin the berries in all cases freely, and seek to obtain medium-sized bunches well formed in preference to large loose bunches which rarely finish satisfactorily. For hanging through the winter the berries should be more severely thinned, and handsome medium-sized bunches selected for the crop.

Vines in Flower.—Any shy-setting varieties should be gone over with a camel's-hair brush, and if there be a deficiency of pollen it should be taken

from Hamburgs and applied to those having little or none. Maintain a rather dry and warm atmosphere with a gentle circulation of air constantly, and be careful to avoid sudden depressions of temperature, especially after the heat has risen considerably, increasing the ventilation early with the rising temperature, keeping it through the day at 70° to 75° artificially, and 80° to 85° from sun heat, closing early and allow the temperature to fall to 65° at night. For Hamburgs and other cool varieties 5° to 10° less all round will be sufficient.

Stopping and Tying.—After stopping two or three joints beyond the show of fruit, the laterals may be allowed to extend until the trellis is evenly covered with foliage, and continue to lay in as long as there is room for its full development without crowding, being careful not to encourage growth which is likely to interfere with the principal foliage and necessitate its removal in quantity at a later period, as that would cause a serious check to the root-action, and may induce shanking. The shoots should be regularly attended to in tying, as when allowed to reach the glass they are liable to have moisture condensed on them, and to become scorched.

Watering.—Make an examination of the border at least fortnightly, and if water is needed afford a thorough supply in a tepid state. If weakly or carrying full crops afford liquid manure, and top-dress in accordance with the requirements of the Vines. If the borders are poor a good mulching with cowdung will be of great service, especially if kept moist, so as to encourage the roots to become active in it; but Vines that are young and full of vigour a moderate covering of short horse-dung will be found most suitable.

Grapes Stoning.—Do not hurry the Vines through this process, but keep them cool and steady, 60° to 65° at night being sufficient, as it is better to let the roots get in advance of the supply of nutriment than throw a strain upon them at the most trying period, which, under any circumstances, is an exhausting process, and requires time.

Houses of Ripe Grapes.—Keep these cooler, 60° artificially is ample, and afford a circulation of fresh air, with sufficient moisture in the atmosphere to keep the foliage in good condition and free from insects. Examine the borders, and if sufficiently moist cover with some dry non-conducting material to prevent evaporation, but if water is needed afford it thoroughly in the early part of a likely fine day, and cover with the dry mulching before closing. It must be borne in mind that Vines carrying ripe Grapes in June and July will not only bear, but absolutely require, more moisture than they do in autumn to meet the increased evaporation consequent on the greater amount of sun heat.

Lifted Vines.—Look well after Vines, especially old ones that were lifted last autumn, also newly planted young Vines, encouraging new roots to make their way to the surface by the use of good stable litter kept moist as a mulching. Afford generous treatment to the tops, encouraging free growth by closing early in the afternoon with plenty of sun heat and atmospheric moisture. Avoid a high temperature, especially at night, not exceeding 60° until the roots have taken freely to the soil. Disbud lightly, as the more growth is made the freer the root-action. Stop side shoots at about the sixth leaf, and afterwards allow the laterals to extend, but the laterals from the two lowest joints stop at the first leaf so as to secure plump eyes for pruning to. On the main or leading shoot stop the laterals at the first joint, and afterwards allow them to extend as far as space admits without crowding.

Vine borders may now be planted with spring-struck Vines, and with proper encouragement they will fill the house with fine canes by the autumn.

Give more aid to the early potted Vines intended for fruiting early next season, and keep the foliage clean by syringing, as everything depends on getting the wood well ripened and the eyes thoroughly developed.

MELONS.—Earth up the hillocks in succession houses, pits, and frames as the roots protrude, continuing this until the allotted space is filled. Do not allow the plants to suffer by want of water at the roots, yet do not give it in excess. Plants swelling their fruit will need liberal supplies, and they may be followed when a stimulant is needed with tepid liquid manure. Plants coming into flower must have free ventilation during the day, the syringe being withheld until they have set their fruit, after which it must be brought into requisition again. The shoots of young plants which are covering the surface of the bed in pits or frames should be thinned to three or four leading growths, and these must be stopped as soon as they have travelled two-thirds their allotted space. This will cause secondary or side shoots to be produced showing fruit at the second or third joint, and as the blossoms expand a rather drier atmosphere should be maintained, and when the flowers expand they should be impregnated when the pollen is dry. Three or four fruits to each plant, according to their vigour, will be sufficient for a crop, which it should be sought to obtain of an equal stage of growth so as to insure simultaneous swelling. Stop one joint beyond the fruit, and keep the foliage fairly thin so as to maintain the principal leaves in good condition.

PLANT HOUSES.

Ferns.—To have *Adiantum cuneatum* in good condition for cutting the plants must not be grown in a close atmosphere, or the fronds fade almost directly they are removed from the plants. Those started in brisk heat early in the season will have pushed freely, and should now be prepared for cutting in cooler temperatures. If the plants are gradually hardened to this treatment they will not only solidify the fronds already made, but they will continue producing them, which in their turn will be ready for cutting, and thus a succession of fronds will be maintained for

a long time. During the whole of the summer months this *Adiantum* should not be subjected to too much heat, for it is not required; on the contrary, the plants do much better in an intermediate structure. Our most useful plants for late summer and autumn were started in heat, and then grown in the cool Orchid house until the fronds were used. It is a good plan to divide into two or three plants that have had the fronds used from them and are too large for 5 or 6-inch pots, and place a portion at this season of the year in wire baskets 7 or 8 inches in diameter, growing them at the back of vineries and other similar structures, suspended so that they can be reached from the path when they require water. The plants really do better when grown on this principle than when in pots, and yield abundance of fronds for cutting. Seedling plants required in a very small state in thumb pots for decoration must not be grown in too much heat, or their fronds become weakly and their beauty is destroyed.

Davallias.—These are amongst the most useful of Ferns for cutting, and such varieties as *D. bullata*, *D. elegans*, *D. canariensis*, *D. dissecta*, and others thrive much better in small baskets the same as advised for *Adiantums* than they do in pots. While making their growth these plants enjoy the moist heat of a vinery or Peach house, and the cooler treatment afterwards also suits them admirably, hardening their fronds for cutting. Although these varieties grow remarkably well under comparatively cool treatment, they nevertheless produce more than three times the number of fronds when grown in heat. *D. dissecta* is deciduous during winter, but it is no worse for this, as it starts freely into growth directly it is introduced into heat. Plants that were started three or four months ago have abundance of fronds, and a few weeks' cool treatment will render them durable when cut. The fronds of these Ferns when well hardened are amongst the very best that can be grown for packing to travel a long distance.

Microlepia hirta cristata.—A charming Fern for decorative purposes in 4 or 6-inch pots singly in vases, or even in the centre of the dinner table. From a large plant it is not difficult to cut a number of small pieces. These soon establish themselves in small pots in heat, and should then be grown in a vinery or an intermediate structure, potting them as they require more root room, for if grown too warm they become a prey to scale, and fail to produce their beautiful crested fronds. Young plants started now will be symmetrical specimens, if not crowded together, for use during autumn and winter.

Polystichum proliferum.—Where numbers of small Ferns are required for associating with other plants for room-embellishment, this should be raised in large numbers. It is one of the most serviceable plants that can be grown, will give less trouble in preparation than probably any other variety, and is easily increased. The old fronds should be pegged upon the surface of light soil, and young plants are produced the whole length of the fronds. When these are sufficiently large and well rooted the fronds should be cut off, the young plants lifted and transplanted into pans singly until they are large enough for 2-inch pots, which is the case in a very short time if kept in a vinery or warm moist structure. For many purposes of decoration the plants need not be potted, but lifted from the boxes when required. If larger plants are needed those that have done duty can be transferred into 4 and 5-inch pots, or can be planted outside, for this Fern is perfectly hardy.

Selaginella Kraussiana (*S. denticulata* of gardens).—Probably this is the most useful species that can be grown for covering the surface of pots and for all other decorative purposes for which such plants are required. Batches in shallow pans, small pots, and boxes should be prepared at intervals of two or three weeks, according to the demand. When used for the surface of pots and other similar purposes we have found it to last decidedly best when established in shallow pans, so that the roots of the plants and a portion of soil can be removed with the plants. A sufficient stock of established plants should always be kept on hand and thoroughly hardened in a cold house some weeks previous to being used. It is a good plan to establish a stock on the surface of Vine or Peach borders, or other similar positions, in a little light sandy soil ready for filling pots and pans as required.

THE BEE-KEEPER.

MANIPULATING BEES BY LAMPLIGHT.

KEEPING CORRECT ACCOUNTS.

"A SURREYSHIRE BEE-KEEPER" says in his excellent article on page 341, "We have heard of one bee-keeper showing his bees by lamplight to an admiring circle of friends," and describes it as the height of folly. To this statement as he gives it, without any qualification, I wish to take exception. I recently saw the same statement in the *British Bee Journal*, but the bee-keeper referred to was not named. As I am in the habit of manipulating bees by candle and lamplight, and not having heard of anyone else doing so, for aught I know it might be myself that he had heard of, perhaps at the fiftieth hand, and so it reached him in a very misleading aspect.

I know one prominent bee-keeper (Mr. Conlan) is reported to have said that he had tried lamplight manipulating with very unpleasant results; but his failure does not condemn the system, it only goes to show he did not go the right way about it. I hold that when the mercury stands at 75° and above hives may be safely opened; and during the hot part of August and early September, when bees are so prone to rob, I find this the safest time to open a hive. I have removed virgin and laying queens, extracted honey, united stocks, and in fact done every conceivable thing by lamplight, and never seen any unpleasant result. On the contrary, I have seen disastrous consequences follow opening hives in the daytime during the autumn. By manipulating them at night bees get quiet and settled down before morning, and we run no risk of scorching the brood by the sun's rays when the mercury stands about 90° in the shade. I always begin as soon after dark as possible. I worked for hours last season at the Heather by means of a naked candlelight, and not a bee flew against it. If the wind was not still I put the candle in a box against the wind. By all means let us have lamplight manipulations when it can be safely done without chilling the brood.

The advice to keep correct accounts in everything relating to bee-keeping I consider very valuable, and if strictly carried out will open bee-keepers' eyes as to whether they can afford to sell or produce honey at 3d., 6d., or even 1s. per lb.; but of all people bee-keepers are so inclined to make their calculations on their best stock, and then look round and wish all had done likewise; and with those that died in the winter and spring quickly calculate what amount of honey they would have had if all had turned out similarly, and as he sees no reason why they should not he is encouraged to go on year by year losing money. It is this calculating on the returns made by the best stock which leads so many astray, and which the idea of "A Surreyshire Bee-keeper" will do so much to dispel. In the *British Bee Journal* for May 15th an illustration is given what a best stock did to encourage the labouring classes to keep bees, and as the price of honey is given at double what a certain trading venture is going to give for it, and nothing debited in the account for time spent in the various little items necessary in making food, manipulations, &c., I consider such an account a very misleading one.

I know a bee-keeper in Wiltshire, who has kept bees over twenty-five years, has always been up with the times, and was amongst the first who had Italians, says that—taking his calculations on the stocks he puts up for winter and one year with another—they never have averaged more than 10 lbs. of surplus honey each stock, though he frequently gets upwards of 60 lbs. of super honey from one. Even the best authorities in bee-keeping never think of basing their calculations on the stocks they put up for winter; and one American writer (Mr. G. M. Doolittle) not only avoids doing so, but even takes only his best stocks to calculate on. If commercial undertakings did so, and did not replace lost capital before calculating the profits, they would soon have to wind up.

As I have quoted Mr. Doolittle I will give his way of showing the balance and what it ought to be; he gives it in the *American Bee Journal*, page 629, for last year. It appears he put up eighty stocks for winter in fall of 1883, each with about 20 lbs. of honey or sugar stores, and came out in the spring with twenty-six strong and fourteen weak ones; to these he fed £13 3s. worth of sugar to tide over bad weather and get them strong, and values the honey he got at £19 7s. 3d., or a return of 1s. 6½d. in honey of each of the eighty stocks he put down for winter; he increased his stocks again into eighty, and to sixty of them, he subsequently says, he fed from 10 lbs. to 20 lbs. of sugar each, but he does not say how much nor its value, but I should think certainly the value of the honey would go in sugar to make his capital up to what it was the year previous; nothing is deducted for

sections, time spent, or interest on capital, &c. He makes out a return as an average of 27 $\frac{2}{3}$ lbs. of honey each stock by taking the twenty-six strong ones to "average" on, and by adding 500 dols. he received for queens (being a great queen breeder, which is a total side issue and depends entirely on making bees return a profit in honey), and dividing by the forty which came through alive, he makes out an average profit of £2 15s. 3d. for each stock—a striking contrast to my calculation of sixteen and a half to be more than returned in sugar.

It is such misleading accounts as these which cause new hands to expect more than they will ever realise, and unless they carry out your correspondent's idea and keep strict accounts of everything, even the time occupied in manipulating, they will be for ever expecting impossibilities. There are losses in all trades one way or other, that they must be deducted from profits, and bee-keeping is no exception, perhaps the losses in this business are greater than in any other.—A HALLAMSHIRE BEE KEEPER.

INTERCHANGING COMBS.

SPREADING BROOD.

WHEN the spreading of brood was first propounded it was advised to be performed without the slightest precautionary measures. I was amongst the first to write against what I knew would ultimately ruin the hive operated on. After our notes of warning, the operation was advised to be performed in similar language as your correspondent uses (page 383)—"It must be done cautiously and skilfully, or it will result in failure, the advent of foul brood, and maybe the loss of our hive or hives." It is singular that an operation so hazardous should be performed or recommended, and all the more so when not a single writer on the subject has ever given instructions as to the time it should be performed. There have been no proofs given of the advantages likely to accrue from the spreading of brood, but plenty of assertions, which I challenge.

The question suggests itself: Does man require to give bees a helping hand in the spreading of brood? Do bees fail to perform this important part of the internal economy of the hive? I think not, and those with contracted hives have had good examples of the natural spreading of brood when they find their supers have been invaded by the queen, and the cells freely made use of for brood instead of honey. A disappointment and a loss at the same time.

I now ask the question, When should that operation be performed? I anticipate the answer. Surely not until frost passes away, because it is the rise of the outside temperature that encourages bees to breed, and a fall that incites them to destroy eggs and larvae; and this is done throughout the year when bees are allowed to work as Nature designed, and a great deal more when any art has been used to spread the brood.

While I am writing this (May 8th) we have had only four full days this season that bees carried pollen and honey, and only twice has the thermometer risen to 60°. There were but twenty-four hours between a snowstorm and the commencement of the honey season. After the four days of honey-gathering expired the thermometer sank to 25° during the night, reaching 40° only during the day, giving a mean of 32 $\frac{1}{2}$ ° for three days in succession, the fourth day being only 3° higher; but every day and night heavy snow showers fell. To-day it is more genial, but still very cold. I never experienced a more protracted season, but it is not uncommon to have such weather in May. Under these circumstances, he would indeed be unwise who would spread the brood under any pretext whatever. When is it to be done? I again ask. My bees unfed and brood unspread, and have been so during their lifetime of three years to some and less to others, are within a short time of swarming or supering as the case may be; but if I had recourse to brood-spreading my hives would have been a long way from giving satisfaction or profit.

Advocates of brood-spreading tell us of the great and rapid increase of bees after the operation—a grand device to mislead the novice. It takes nearly three weeks from the laying of the eggs until the hatching of the perfect insect, so it is impossible for a hive to be benefited by any spreading of brood before that time; but unless it can be proved that bees refuse to spread their own brood—a thing never known unless in cases of disease—there can be no good but much mischief wrought in the spreading of the brood at any season, or under any circumstances. I quite agree with the advice given by your correspondent not to waste, and to keep accurate accounts. I will supplement his advice, to make and take notes, and keep them, and all who have leisure and can afford to spend time and spoil a hive by spreading brood, let us know the result of these experiments at the end of the season; but do not blame me for any loss. I have sounded the warning note.

Equally hazardous to spreading brood is that of interchanging combs from one hive to another. By this means did the late T. W. Woodbury ruin his whole apiary by the spread of foul brood. Taking a brood-comb from a strong stock does more injury to that hive for the season than any good it can do a weak one. The proper way to do with weak hives is to utilise its queen the first opportunity, and put the swarm in its combs if they are clean.

It is useless in attempting to force bee-keepers to adopt any particular

hive or hives, for there will always be advocates for all systems; let us, therefore, instead of condemning any system, help our less experienced brethren with the hives they possess, who in many instances are willing and anxious to advance for their own sake in making manipulation easier, but know full well that it is absurd to say that frame hives are productive of more honey than straw ones.

In support of my argument I have received many letters from districts with little else than straw hives, and yet I know none with frame hives that send more honey to the market than they do, both in supers and drift honey.—A LANARKSHIRE BEE-KEEPER.

BEES AT THE LINCOLNSHIRE AGRICULTURAL SOCIETY'S SHOW.—As may be seen in our advertising columns a very liberal schedule of prizes is offered for bees, honey, hives, &c., by the Lincolnshire Agricultural Society at their annual meeting to be held at Great Grimsby on the 29th, 30th, and 31st July. The fact of this important Society continuing to include a department for bees, &c., at their annual gathering speaks much as to the value they attach to the department as a means of encouraging the more extended cultivation of bees for the good of all.

TRADE CATALOGUES RECEIVED.

R. S. Williams, Victoria and Paradise Nurseries, Upper Holloway London.—*New and General Illustrated Plant Catalogue.*



* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Books (*F. P.*).—A book that will suit you is Johnston & Cameron's "Elements of Agricultural Chemistry and Geology," price 6s. 6d., published by W. Blackwood & Sons, Edinburgh and London. The cases for binding this Journal are 1s. 6d. each.

List of Roses (*H. B. B.*).—We are obliged by your suggestion, which shall have our early consideration.

Blood Manure (*Kelt*).—The recipe of Sir Daniel Cooper, Bart., to which you refer, not having proved satisfactory, we ordered its withdrawal from the "Gardeners' Year Book," but by accident it was retained. It seems to us that three or four times the quantity of acid is needed for reducing the blood, and we can only suggest that you try a much larger quantity and ascertain its effect.

Birds and Pears (*M. F. W.*).—In reply to your question as to what to do to prevent birds destroying Pears by pecking round the stalk when they are a good size, which causes them to rot, we can only suggest some stout circular pieces of cardboard similar to the collars that are used for supporting the petals of Carnations, with a slit made from the side to the centre and a very small hole there, so that the collars can be fitted round the stalk. We have seen these collars quite baffle the mischievous tits that seem to delight in spoiling as many Pears as they can.

Cephalotus follicularis (*W. X. H.*).—This, we presume, is the plant you mean, and is popularly known as the New Holland Pitcher-plant. The following extract from our "Greenhouse Manual" will answer your inquiry:—"It bears numbers of little pitchers and is very interesting, and to do well should have a warm part of the greenhouse. Grow it in a mixture of chopped sphagnum and sandy fibrous peat, providing extra good drainage, keeping the plant rather high, and just covering the roots. It is well to insert the pot in one of larger size, filling the interval with sphagnum moss, and cover with a bellglass fitting the inside of the outer pot, taking off and wiping dry occasionally. In summer the pot may be stood in a saucer kept full of water, lessening the quantity towards autumn and keeping empty in winter, and with the bellglass tilted or slightly raised. The compost must be kept wet in summer, but less so, yet moist, in winter."

Horn and Hoof Shavings as Manure (*F. P., Exeter*).—So far from these being of no value, they of great use as a manure, being particularly good for fruit trees, because of the slow decay of the matter and its consequent lasting value for the trees. They contain nitrogen, phosphate, and a very large amount of sulphur. The smaller the particles are the more quick is the action of horn shavings, and they are the more immediately effective if rotted in a heap before being applied to the land. They are good for

trees without such preparation if spread on the ground and pointed into the moist soil, where they slowly decay and benefit trees that require manurial aid.

Fish Manure for Roses (W. R. B.).—There is no doubt of fish manure being chemically well suited for Roses, but a chemical analysis of Roses would be of no value unless every plot of ground in every garden where Roses are grown were analysed too, and its constituents thus ascertained. From experience we can vouch for fish being a capital manure, not only for Roses but for every crop, the main thing being not to apply it too heavily, and always some little time before growth is desired to be accelerated. It is best applied as a surface dressing and lightly pointed in. For Roses a dressing in March and another early in July would be likely to be most beneficial.

Spray Engine—Turnip Fly (E. B., Herts.).—We have seen the spray engine to which you refer work effectively, and no doubt one of a suitable size for your purpose, charged with an insecticide and used in time, would keep Rose trees free from aphides; we will not say mildew, because the attacks of this depend so much on the nature of the soil, and especially the position of a garden. We know of no simpler method of checking the attacks of the turnip beetle than by dusting the plants early in the morning, when they are wet with dew, with finely sifted ashes mixed with soot and a little superphosphate of lime. Farmers sow stimulating manures with the seed to force the growth of the plants as quickly as possible, as they are not seriously attacked when rough leaves are produced; but, whatever may be used, they cannot grow quickly in cold weather.

House for Vines (Old Ebor.).—The house with a S.W. aspect, which does not receive the sun until 8.30 at this time of year, and having it the remainder of the day, will be suitable for growing Grapes; but it will be necessary to have the house ventilated as soon as the sun shines upon it, as there will be danger of the foliage being scorched. A little air should be given in advance of the sun acting powerfully upon the house, which, inducing a circulation of air, will dissipate the moisture accumulating through the night. It is not necessary for the Vines to be planted outside; indeed, they are often best planted inside, and in your case we should make a border half the width of the house in the first instance, having 24 to 27 inches depth of soil over 9 to 12 inches thickness of rubble for drainage. Medium turfy loam, with a tenth of old mortar rubbish, is a suitable compost for Vines, adding about a fortieth part of half-inch bones. The most useful Grape for such a house is the Black Hamburgh, and if you require a white one Foster's Seedling would be a suitable companion.

Grapes Scalding (Dorking).—The cause of Grapes scalding is a deficiency of ventilation. It is not caused by anything you have done to the border, though the exposure of the border during the cold weather of April and early May would be likely to check root-action and lessen the supply of nutriment, consequently aggravate the evil of scorching. When Grapes approach the stoning process it is well to leave a little air on constantly, and to increase it early in the morning, and proportionately with the increased sun heat, and employ gentle fire heat constantly so as to secure a circulation of warm air, and this attended to until the stoning is effected will mostly effect a satisfactory issue, as when the Grapes begin to change colour for ripening they are safe from scorching.

Gloxinia Leaves Scorched (F. J.).—Scorching is not caused by the use of stimulants, but plants that are made gross by their use are more liable to have the foliage scolded than those that are grown slower and have the growth solidified as made. The only way that stimulants would act injuriously would be in too powerful doses, destroying the roots, and the plants would then collapse under powerful sun, or its use upon the foliage would burn the leaves and cause them to spot. The cause of the leaf sent being scorched is its being acted directly and powerfully upon by the sun whilst wet, which may be from deposited moisture through the night, or from syringing or watering. The only remedy is early ventilation and shade from powerful sun, especially after a dull period succeeded by a bright one.

Grapes Splitting (W. B.).—We are not able to inform you the exact size of the gimlet used by Mr. Thomson for boring through the laterals of his Vines for checking the flow of sap to the bunches. The size, we imagine, should be determined by the thickness of the parts to be operated on and the luxuriance of the growth. A hole an eighth of an inch in diameter may safely be driven, when needed, through a stem from 1 to 1½ inch in circumference, according to the vigour of the Vine. Perhaps Mr. Thomson will oblige by supplying any further particulars he may think desirable in this process, which he and others have found so useful.

Bignonia capreolata var. atrosanguinea (W. Day).—A very distinct form of a species common in North America. It is hardy in the south of England and in Ireland if trained against a south wall, but generally, in this country at least, it proves most satisfactory when treated as a cool greenhouse climber. It likes a light airy position, plenty of water during summer, and a rest in winter. The roots should be planted in a well-drained loamy soil, and the shoots should not be cut back, but thinned, as the flowers are borne on the young ripened shoots of the previous year. There is a fine plant of this dark-flowered variety in the conservatory (No. 4) at Kew which flowers every year. The other specimens to which you allude did not reach us.

Dissolved Bones for Chrysanthemums (W. J.).—We have very little doubt that the manure of which you send a sample is quicker in its action than bonemeal; in fact, by dissolving bones in acid the oily or gelatinous matter is removed, and the superphosphate of lime which is produced is much more soluble in water than bonemeal, and hence more immediately available for plants. It should, however, be used sparingly in the soil, or it may produce excessively luxuriant growth, and the quantity can always be increased if needed in the form of top-dressings. Bonemeal cannot do harm to Chrysanthemums, and often does good by acting just when extra support is needed towards the end of the season. We have not tried Besson's manure for these plants, but have heard of cultivators doing so satisfactorily. If we understand its preparation rightly it must be quicker in its action than bonemeal, and also sufficiently lasting for most or all kinds of softwooded plants in pots. We suspect the sample of dissolved bones you

have sent contains some other addition with the object of rendering it still more quickly effective.

Asparagus Failing (E. M., Nottingham).—We have seen some excellent crops in your neighbourhood, and think the soil generally is suitable for Asparagus culture. The roots sent resemble those we have seen when failing through being checked in transplanting. Did you use much salt or strong artificial manure in the composition of your beds? Established roots will take a great deal of this, but newly planted ones are often injured by it. We think one of those causes is the reason of your failure. Vegetable refuse and road scrapings are very good in which to plant young roots. We have frequently made up an extra mixture of this, dug out two or three spadefuls of the soil in the beds, and filled up while planting with the compost around the roots, and every plant succeeded. We have no doubt you will have much better results by sowing seed. It may be put at once into the beds if they are not overdone with the matter we speak of; if so, take a spadeful of the soil out 1 foot apart each way all over the beds, add gritty stuff, make a small hole in the centre of each new part, put two or three seeds into each, and allow these to become permanent plants. No transplanting will be necessary, and we feel sure you will soon secure good beds. It is a very difficult matter to transplant three-year-old roots successfully. Being out the soil for any length of time on a dry windy day is very injurious to them, and this is why we find it, as a rule, best to raise our own seedlings.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (M. H. S.).—Saxifraga granulata, very well grown. (W. J.).—Ribes aureum or yellow-flowering American Currant. It is a native of Missouri, and we have rarely seen finer specimens. (J. E.).—1 and 2, Varieties of Phlox setacea; 3, Saxifraga Wallacei; 4, Saxifraga ceratophylla. (Harrison).—Ixia craterioides. (W. A. B.).—1, Hibiscus rosa-sinensis flava plena; 2, Geranium atro-sanguineum; 3, Lupinus polyphyllus; 4, Iberis corifolia; 5, Hesperis matronalis.

COVENT GARDEN MARKET.—MAY 27TH.

MARKET is still supplied with forced fruits, Grapes and Strawberries. Vegetables plentiful.

		FRUIT.			
		s. d.	s. d.	s. d.	s. d.
Apples	½ sieve	2 6	to 4 6	Oranges	100 4 0 to 7 0
Chestnuts	bushel	16 0	0 0	Peaches	per doz. 15 0 21 0
Cobs, Kent ..	per 100 lbs.	0 0	0 0	Pears, kitchen ..	dozen 1 0 3 0
Currants, Red ..	½ sieve	0 0	0 0	„ dessert ..	dozen 0 0 0 0
„ Black ..	½ sieve	0 0	0 0	Pine Apples English ..	lb. 2 0 3 0
Figs	dozen	4 0	6 0	Plums	½ sieve 0 0 0 0
Grapes	lb.	3 0	5 0	Strawberries ..	lb. 2 0 4 0
Lemons	case	10 0	15 0	St. Michael Pines ..	each 3 0 7 0

		VEGETABLES.			
		s. d.	s. d.	s. d.	s. d.
Artichokes ..	dozen	2 0	to 4 0	Lettuce	dozen 1 0 to 2 0
Asparagus ..	bundle	2 0	5 0	Mushrooms ..	punnet 0 0 1 4
Beans, Kidney ..	100	1 0	0 0	Mustard and Cress ..	punnet 0 2 0 0
Beet, Red ..	dozen	1 0	2 0	Onions	bunch 0 3 0 6
Broccoli	bundle	0 9	1 0	Parsley ..	dozen bunches 2 0 3 0
Brussels Sprouts ..	½ sieve	0 0	0 0	Parsnips	dozen 1 0 2 0
Cabbage	dozen	0 0	1 0	Potatoes	cwt. 4 0 5 0
Capsicums	100	1 6	2 0	„ Kidney ..	cwt. 4 0 5 0
Carrots	bunch	0 3	0 4	Rhubarb	bundle 0 4 0 0
Cauliflowers ..	dozen	2 0	3 0	Salsafy	bundle 1 0 0 0
Celery	bundle	1 6	2 0	Scorzoneria ..	bundle 1 6 0 0
Coleworts ..	doz. bunches	2 0	4 0	Seakale	per basket 1 0 0 0
Cucumbers ..	each	0 3	0 6	Shallots	lb. 0 3 0 0
Endive	dozen	1 0	2 0	Spinach	bushel 2 0 4 0
Herbs	bunch	0 2	0 0	Tomatoes	lb. 0 0 0 0
Leeks	bunch	0 3	0 4	Turnips	bunch 0 4 0 0



DAIRY FARMING.

SPRING.

(Continued from page 430.)

IN quoting from Professor Sheldon's great work on Dairy Farming last week we had in view the fact that many a manager of a home farm could not afford to purchase that somewhat expensive book, which clearly sets forth the views of the best modern authorities, many of which we have had occasion to put to a severe practical test. There can be no doubt that much of the disease among young animals arises from mismanagement more than actual carelessness. A person entirely ignorant of animal physiology must of necessity be working very much in the dark in his treatment of

very young animals, and we may usefully quote a couple of paragraphs from an able article on scouring in calves by Professor James Law before leaving that part of our subject. "When the young animal comes into the world it is called upon to exercise new functions of the most varied kind. Its lungs, hitherto unused, are inflated with air, and the red blood, drawn into a new channel, circulates in the almost endless membrane which lines their cells and cavities. The digestive organs, hitherto the torpid and inactive receptacle of the excretions from their own walls, from the liver and pancreas, must take in aliment, secrete the digestive fluids, absorb the elaborated products, and expel the effete matter in order to sustain their own integrity and that of the system at large. With the skin exposed to all the unwonted vicissitudes of cold and heat, and too often of dryness and wet, and the lungs compelled to breathe air at all degrees of temperature, tension, and aqueous saturation, and with all grades of impurity, it is not to be wondered at that the digestive process is sometimes retarded or rendered imperfect, and that the foundation of serious and fatal disorders is laid.

"Perhaps the most common cause of indigestion and scouring during the first week of life is the want of tone and activity in the bowels. These are clogged at birth with tough, yellowish-brown bilious products that have been accumulating for months, and that virtually glue the walls of the intestines together, and prevent their natural movements or the passage of anything through them. To remove this, Nature has provided a first milk—colostrum—rich in albumen and salts, and actively laxative; and if from any course this is withheld, danger can only be obviated by the substitution of some other purge, such as 2 ozs. of castor oil or magnesia. To make these more effectual and more like Nature's laxative, they should be given in one-half these doses for several days in succession, until the natural activity of the bowels has been established."

What farmer has not witnessed the very common custom of "drawing the milk" by the cowman soon after the calving? and, we add, who, after thoroughly mastering the valuable teaching of our quotation, would again allow it to be done? Stringent orders should be given to the cowman to assist a weak calf in its first attempts to suck, but never to take any of the first milk from it, and if all is well with cow and calf to leave them alone for a day or two, so far as concerns the milking. If any doubt exists about obedience there should be close personal supervision. More than once has the ready "Yes, sir!" in response to our orders been followed by deliberate disobedience.

Congestive fever often does serious harm to young highly fed beasts. The term of black-leg or quarter-evil that is usually applied to it is puzzling and, we fear, misleading. We have known men who were proficient in most branches of farming to be sorely puzzled by this fell disease—puzzled and disheartened too, for it invariably attacks their most cherished animals. A man may proudly point to his beasts so plump and forward in condition as giving promise of a speedy and profitable return upon capital expended upon them, and in twenty-four hours' time many of them may be dead or dying. "Struck" is the popular but vague term applied to such attacks. Struck!—but by what? The use of such a term shows that there is a sense of something unreal and mysterious about it. Yet the cause is patent enough. The animals have been forced by high feeding from the birth into a plethoric habit, and nothing is done to relieve them; they are kept on at high pressure till congestive fever attacks them, and then two or three or a dozen may speedily succumb to it, simply because the whole of them have been overfed, and not from infection. We have no special remedy to offer, but we certainly may prevent such attacks by a frequent change of diet, by the use of roots and green food, and by putting setons in the dewlap. It is important that the effect of a seton should be clearly understood. We have seen many a young animal with a piece of cord passed like a seton through the dewlap, and which had evidently been worn for a long time,

but there was no sign of either inflammation or discharge. Now, the literal meaning of the word is an issue, and we apply the seton dressed with an irritant to induce local inflammation and a discharge to relieve the entire system, which it does. We would always, however, lay most stress upon a careful dietary in our treatment of young animals than upon any specific, avoiding an excessive use of cake of any kind, taking especial care that the drinking water is sweet and pure, always keeping rock salt for them to lick, and including a fair proportion of green food with that which is more forcing. Warmth and cleanliness, with kindly gentle treatment, are also to be regarded as indispensable. Calves should always have shelter close at hand, and we repeat that a warm roomy lodge, with a small yard in front of it opening into a small grass paddock, is a most suitable home for them throughout the year.

(To be continued.)

WORK ON THE HOME FARM.

The value of early crops of green fodder was never better shown than at the present time, and much land may be turned to profitable account in the culture of them upon every farm, but upon those which are within a few miles of large towns many an acre may now be cleared and sown again at a certain profit. Purchasers of green fodder in towns are invariably more numerous than sellers, and we would give a hint to every farmer whose land is so situated as to enable him to take advantage of it. Unfortunately, but too many farmers have not enough green food for home consumption just now, and so hay, corn, and roots are still in full use. We have some fields clear of Rye and Rye Grass, which will be broken up as speedily as possible for Turnips. *Trifolium incarnatum* is almost ready for use, and by the time that is over the winter Tares will be ready. More spring Tares have been sown, as we are a little overstocked with sheep, and a field or two of Tares cannot fail of being very useful later on. The Mangolds have come strong and thick in the drills, and a change to warmer weather will, we hope, bring them on so fast as to enable the thinning and hoeing to be done before haying, for if left till then the weeds are liable to become very troublesome. Carting of manure from the stock yards is now being done as frequently as horses can be spared for it, but the preparation for Swede sowing and the carting of Oak bark to the tannery has taken up much time. Another matter has been the carting of some thousands of faggots off the park. Some two months ago the thinning of some extensive belts of ornamental trees was finished; as the trees were cut they were thrown into the park, made into faggots, piled into heaps, and left there for sale. It consequently became our duty to interfere, and have the heaps removed at once off the grass which was being spoiled for the season. Apart from the injury done to the grass, this by far too common habit of leaving heaps of faggots, poles, fire wood, and logs of timber scattered over an estate is to be regarded as a sign of bad management, imparting a careless slovenly aspect to the place, and preventing anything like a check being kept upon the stock of wood. Cutting down timber with axes is another piece of obsolete practice which we have lately come upon to our great surprise. Three men, a rope, a cross-cut saw, an axe, and a large iron-tipped wedge are the tools for tree-felling. When grubbing outright is impracticable cut with a saw close to the surface; the tree is thrown quickly and profitably, but cutting solely with an axe is not only laborious but wasteful, 2 or 3 cubical feet of the best part of the trunk being chopped up into chips.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	9 A.M.				IN THE DAY.				Rain	
	Barometer at 39° and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.		On grass.
1885. May.	Inches.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	In.	
Sunday	29.745	51.2	45.3	W.	50.8	57.6	43.0	103.3	37.4	0.163
Monday	29.902	47.8	42.4	W.	50.2	57.2	39.1	104.6	33.1	—
Tuesday	30.019	51.8	45.4	S.W.	49.8	56.9	39.6	87.3	33.5	0.118
Wednesday ..	29.588	48.8	46.2	S.E.	49.6	54.6	45.1	74.8	41.4	0.363
Thursday	29.388	46.1	44.7	S.E.	48.7	59.5	41.0	105.9	35.3	0.390
Friday	29.161	48.2	47.6	E.	49.2	55.3	45.6	87.1	40.7	0.109
Saturday	29.656	55.4	48.8	S.W.	48.8	59.7	43.5	112.3	40.2	0.225
	29.637	49.9	49.8		49.6	57.2	42.4	96.5	37.4	1.368

REMARKS.

17th.—Showers at intervals; thunder at 0.34 P.M., and occasionally until 3.18 P.M.; hail at 2 11 P.M.
 18th.—Fine pleasant day, slight shower in morning.
 19th.—Cloudy day, prismatic solar halo in P.M.; rain at night.
 20th.—Wet morning, showery afternoon, and night thunder.
 21st.—Thunder about 9 A.M.; bright for some hours about noon; showery at times; hail at 4 45 P.M.
 22nd.—Heavy rain early; wet morning; showers in afternoon; fine night.
 23rd.—Fine early; showery morning; thunder and lightning at noon, followed by rain and hail; fine night.
 Rather less cold than the previous week, but still much below the average; also very damp.—G. J. SYMONS.



COMING EVENTS

4	TH	Linnean Society at 8 P.M.; Royal Society at 4.30 P.M.
5	F	
6	S	
7	SUN	FIRST SUNDAY AFTER TRINITY.
8	M	Bath and West of England Show at Brighton.
9	TU	Royal Horticultural Society—Committees at 11 A.M.; Orchid Show.
10	W	

SMALL HARDY FRUITS.

IT may not be necessary on all soils to make plantations of Strawberries purposely for yielding a bountiful supply of runners for layering into pots early in the season for forcing. On light soils this system is, however, of importance, for the plants are very liable to suffer from drought, and few, if any, runners can be obtained from old fruiting plants until late in the season. Even on soils of a more retentive nature, if runners are freely produced several difficulties have to be contended against, and frequently the young plants are drawn weakly by the mass of foliage produced by the old plants, and thus they are rendered almost useless. It is not my intention to discuss the relative merits of the two systems, but to deal with plantations made in August last on light sandy soil, for several years' experience points conclusively to the fact that when young plants are purposely prepared and reserved solely for runners the first year it is only by close attention and careful culture that the required number can be obtained in some seasons.

Obtaining early runners that can be grown into good plants and ripened early in the season is in a great measure the secret of having ripe fruit early in the year. If the necessary attention is not paid to the plants at the present time, and the season proves a dry one, the runners will be late, and even then not proportionate to the demand. The flower spikes will be all visible, and these should be removed without delay; in fact, no fruits must be allowed to form before this important work is completed. Clear the ground of all small weeds, and give a good soaking of liquid manure if possible during showery weather; if not, it should be well washed down to the roots with clear water and the ground mulched with decayed leaves, old Mushroom bed refuse, or short manure. This will prevent evaporation and keep the soil moist for a long time, and strong stout runners will be the result in a very short time. If dry weather continues this may be repeated in two or three weeks, and probably if the plants are well mulched no farther waterings will be needed. The strength and quantity of the runners early in the season will more than compensate for the care and labour, to say nothing of the superior condition of the plantation for fruiting next year when subjected to this treatment. The plants are now very backward, and every attention consistent with the well-being of the plants must be given to push them forward as rapidly as possible.

Plantations intended to bear a crop of fruit must be well watered with liquid manure, especially those from which large fruits are required for dessert. It is also wise to thin the fruits for the latter purpose so that larger and better fruits can be ensured. Directly after watering with the liquid the ground between the plants and rows should be covered with clean straw or long litter, which answers a two-fold purpose, and not only insures the fruit being kept perfectly clean, but prevents evaporation, which is of real im-

portance in assisting the swelling of the fruits. Another matter, and one that may to many appear a very trifling one, is the removal of all runners as they are seen. In a few hours an active man can remove the whole from a large plantation if taken in hand directly they are visible. This saves labour considerably at the end of the season when the whole of the fruit has been gathered. But this is not all, as their removal reserves the strength and energy of the plants for swelling off the fruits instead of being wasted on the production and support of runners that are useless. The plants required to produce dessert fruits may when set and thinned be well syringed once or twice daily during hot weather, and this will assist the fruits to swell.

Red Currants as soon as they are set, especially if the trees are luxuriant, should be examined, and the whole of the growing shoots that are 6 inches or more in length may be pinched, leaving them 4 or 5 inches long. The leading shoots or any required for the formation of the bushes may be left two or three weeks longer with advantage. It is a great mistake to leave the growing shoots unstopped until midsummer, and then partially prune them to four or five leaves, and thus expose the fruit and lower leaves to full light and air. The result of this treatment is the premature ripening of the fruit and the destruction of those leaves that it is of vital importance to retain unto the end of the season. Not only does pinching and thinning the shoots at the present time admit light and air to strengthen and develop the lower leaves, but it throws support into the fruit that would otherwise be wasted, and plump the fruit buds wonderfully for another year. When the trees are left until midsummer and then shortened many of the leaves at the base that are so essential have turned yellow and are useless if they have not fallen. Pinching and thinning can be done now with dispatch while the shoots are young and tender, and it is surprising what a number of trees can be attended to in a day. The shoots pinched will soon break again into growth, and will be ready for stopping again in about a month or five weeks; this time one eye only should be left on the lateral shoots, which will be ample for the trees to start fresh growth without fear of the lower buds starting.

When the fruits have been gathered and the lower wood becomes firm and ripened all growing shoots may be removed; and finally, when there is no fear of farther growth, the pruning frequently done during winter may be completed. This can just as well be done while the foliage is fresh upon the trees and the weather genial for the operation as to be left until the foliage has fallen and the weather is cold. The bushes when pruned early may require examination after the foliage has fallen, for solitary shoots may have escaped observation. By this system light and air will be admitted for perfecting and thoroughly maturing the fruit buds for the ensuing year. Frequently Red and White Currants are sadly neglected as regards the early stopping and disbudding of the lateral growths. In some gardens the shoots are shortened only once during the growing season, and in others the trees are only annually pruned, and which of the two evils is the worse it would be difficult to determine. The treatment advised is as essential towards obtaining good fruit and plump buds, as it is important to stop and regulate the lateral growths of Grape Vines under glass frequently during the growing season.

Gooseberries are frequently pruned annually during the winter and left to their own resources during the whole of the growing season. Certainly this is all the attention bushes need that have become stunted and are crowded with fruit buds only, making little or no growth. The remarks that will be given are not intended for such, but for those that are vigorous and make moderate growth. Trees subjected to the spur system of pruning during winter will by this time have made fully 6 inches of wood, and these shoots should be pinched—thinned out if desirable, and also the leading shoots stopped if farther extension is not needed. The shoots

are now soft as well as the thorns, and can be done with the thumb and finger. All strong shoots that may be issuing from the base should also be removed wherever they can be observed, and not left to grow until the end of the season. The bushes grown on this principle of pruning must be treated exactly the same as advised for Currants. Those that are not subjected to too much pruning during winter, merely thinning the shoots, require attention at this season of the year, or they soon grow too large and crowded in the space allotted to them. The leading shoots would often extend a foot or more in length if allowed to do so during the season, and this means a great addition to the size of the bushes annually where the young wood is not much shortened back during the winter pruning. Pinch all the leading shoots at once, and they will branch again into two or three, which if the season prove moderately fine will be well ripened and will fruit abundantly. The shoots produced can be thinned after the fruit has been gathered, or the majority of them removed if thought desirable during the winter pruning, and the wood first made will be found to have formed abundance of fruiting spurs or buds.

I know bushes that have been grown on this principle, and that have had the whole of the wood that was made after stopping removed during the winter pruning, and they have never failed to produce heavy crops of fine fruits annually. Such Gooseberries are moderately thick, and therefore covered early with good foliage, and thus the fruit is safely protected from spring frosts. Stopping the shoots at this season of the year is an admirable practice, especially noticeable in the case of young plantations that are operated upon during the present month. Young vigorous bushes grow strongly and make a number of long shoots that at the winter pruning are probably pruned hard back. It is a great mistake growing wood to be cut away, and often that left is strong, and therefore insufficiently ripened to bear fruit. If the shoots are pinched now—that is, all strong ones and any likely to take the lead—they will soon break again into growth and produce two, three, and often four each. The result of this treatment, which is simple and takes up but little time, is shapely bushes well filled with moderately strong wood certain to fruit freely. To allow the shoots to extend the whole of the growing season is a waste of valuable time in furnishing the young specimens as well as of labour in pruning during the winter that can be considerably reduced by early pinching.

Raspberries really need very little attention at the present time if well manured or mulched during the past winter. If this was not done, or the canes are weak, a thorough soaking of liquid manure will help them wonderfully; afterwards mulching the ground with half-decayed manure. Suckers that spring up freely between the rows may be removed as they appear, and the growths that have started from the base should now be thinned, leaving the strongest and best placed for furnishing the requisite number of fruiting canes another year, the remainder being removed. Many stronger and more luxuriant canes would be produced if attention were only paid to the removal of such shoots that are not wanted. To grow the whole of the season a number of canes that are not required is so much strength lost that would be much better reserved to assist in the swelling of the fruit and the development of the canes for future use. This matter being attended to without delay, farther attention is not needed except for the removal of suckers between the rows, and any weeds that may appear, until the fruits have been gathered and the old fruiting canes require to be removed, so that full air and sunshine can reach and ripen the young canes.

Timely attention to these matters will lead to the most successful results.—WM. BARDNEY.

SUMMER TREATMENT OF WINTER PLANTS.

WELL-GROWN plants of *Richardia æthiopica*, *Spiræa japonica*, *Eupatoriums*, *Salvias*, *Solanums*, and *Schizostylis coccinea*, are not only very useful and attractive in winter and spring, but

they are also of such easy culture as to bring them within the reach of everyone in possession of a small garden and a greenhouse from which frost and excessive damp can be excluded; so easy, indeed, that I wonder at their not being more extensively and better grown by amateurs and gardeners generally than they would appear to be at the present time. I am, however, aware that the plants indicated are admirably grown by most practical gardeners—gardeners who require no instructions from me on their culture; but there are other readers of the Journal besides the experienced amateurs and the practical gardeners to be considered—readers whose previous attempts to grow the plants under consideration have not, perhaps, been so successful as they could wish. It is therefore with a view to assisting these that our remarks shall be as brief and simple as it is hoped they are opportune.

RICHARDIA ÆTHIOPICA.—This is the month in which to lay the foundation for a successful floriferous issue by dividing, and, if necessary, pulling the plants to pieces according to the number required. The plants having been thoroughly watered the previous evening should, as already hinted, be divided, and then planted in the open ground in rows at from 16 to 20 inches apart every way, in a mixture consisting of rather more than three parts loam and one of well-decomposed short dung. In planting, they should receive a gentle shake upwards to settle the soil among the roots, treading according to the condition of the soil, which, when the planting of each plant is being finished, should be drawn back from the stem, thus forming a sort of basin for the reception of water. This done, a stick should be put to each plant and the leaves secured to it, to prevent their being broken with the wind, which would be detrimental to speedy root-action. These leaves will, however, gradually die, but not before the roots are pushing forth into the prepared soil and fresh crowns or leaves are being formed, and which, by the middle or end of August, will have developed into good-sized sturdy plants. The only summer attention which the plants require is keeping them well supplied with water at the roots and free from weeds.

About the middle of August they should be cut with a spade as far from the stems as the size pots into which they are intended to be potted, to sever all rambling roots, and thereby prevent the plants from experiencing so much check as they would otherwise be subjected to in being potted early in September in a compost of three parts loam, and one of horse droppings, leaf mould, and coarse sand. The pots should be stood on coal ashes in a warm situation out of doors, and the plants shaded from bright sunshine for a few days until the roots have taken to the soil; then they will be benefited by being fully exposed to the sun, and after the lapse of ten or twelve days from the time of potting, the plants will have thoroughly re-established themselves and filled their pots with healthy and hungry roots. At this stage of growth the plants, or a portion of them, may either be rested for a few weeks by partly withholding water from the roots and keeping the plants in a cool house until they are required for the forcing house, or they may be grown on steadily with a view to securing an early display of their large white trumpet-shaped flowers borne on stout stems well above the equally imposing large dark green leaves. The *Richardia æthiopica* being a gross feeder, it should therefore receive copious supplies of tepid diluted liquid manure at the roots throughout its flowering period, so as to secure the best possible results in the way of a long succession of large well-proportioned flower spikes, and healthy foliage.

SPIRÆA (HOTEIA) JAPONICA.—In usefulness and showiness this gracefully habited hardy plant has few equals, and if well grown furnished with abundance of Fern-like foliage of a dark shining green colour, depending gracefully over the edge of the pots, and surmounted by a mass of white feathery plumes, it amply repays for good treatment, and this is simple. Annually, from the middle of May to July, as the plants have done flowering, they should, whilst thoroughly moist at the roots, be divided and planted in a favourable situation out of doors from 15 inches to 18 inches apart, according to the size of plant aimed at, in a compost similar to that recommended for *Richardias*, and which will also be suitable for the growth of all the plants referred to in this paper. The *Spiræas* should then be watered and mulched, and, with the exception of keeping them free from weeds, and in case of the summer being a dry one, giving them an occasional soaking of water at roots, they will not require any further attention until the time of potting them arrives, sixteen or seventeen months from the time of planting. Thus plants which were planted out this time last year in the manner indicated will be taken up towards the end of next November, and be potted in suitable sized and properly crooked pots—that is, in sizes ranging from 6 inches to 10 inches in diameter, and those planted out this

month will not be taken until November, 1886, and so on every year. In this way, with proper after treatment, the best possible results are obtained.

EUPATORIUMS AGERATOIDES AND RIPARIUM.—These, though somewhat weedy in appearance, are nevertheless two useful and most easily managed autumn and spring-flowering plants. The first mentioned, which is from 3 to 4 feet high, and of erect habit, is the more useful to grow, seeing that it comes into flower at a time when flowers in the conservatory or greenhouse are less plentiful than at any other time in the year—viz, just when the autumn-flowering plants are going out of bloom and the winter-flowering ones coming in. The plants should be cut into shape, and the balls of earth and roots be considerably reduced before being planted out in the manner already indicated, giving them sufficient room from plant to plant to develop themselves. One-year-old plants and rooted cuttings, by keeping them well pinched for a couple of months after the roots have taken to the soil, and adequately supplied with water at the roots during the summer, make the best and most useful sized plants for conservatory and house decoration.

SOLANUMS AND SALVIAS.—Solanums, of which *S. capsicastrum* is the best and most useful, are amenable to the same treatment as that recommended for the Eupatoriums, as indeed, also are Salvias, but with this difference, that in order to prevent plants of the *Salvia*, of which *splendens*, *Bethelli*, *Pitcheri*, and *gesneræflora* are the best, from making an over-luxuriant growth, they should be set in 6 inches of soil placed on a hard bottom. In this the roots will be kept within bounds, and the plants will make a more stocky and consolidated growth in consequence.

SCHIZOSTYLIS COCCINEA.—This is of very easy culture, and may be had in flower from October to January by retarding a portion of the stock, and introducing as many as may be required to keep up the supply at short intervals into a gentle heat. The habit of this plant, with its dense grass-like foliage and deep crimson flowers, which are produced on stems from 9 to 15 inches high, is graceful, and can be increased readily by division of the roots, and it will do well if planted out in rows at from 15 inches to 18 inches apart, according to the size of plants aimed at, and at the same distance in the rows; after which the only attention they require, until taken up again, is to be kept free of weeds and supplied with water at the roots as they may require it. The plants, like those previously mentioned, should be taken up and potted early in September in suitable sized pots, and housed before frost sets in. Considering the fine effect the *Schizostylis* produces when grouped with *Chrysanthemums*, *Richardias*, *Eupatoriums*, and similar plants, the wonder is that it is not more extensively grown and more frequently met with in gardens.—H. W. WARD.

SOLID CELERY.

SOLID well-blanchéd Celery is always fully appreciated, and is much less hard of digestion than the hollow stringy "sticks" that are too often produced. It is not always the fault of the cultivator that the Celery is really unfit to eat, as after various trials in at least six different gardens and localities, I have arrived at the conclusion that a judicious selection of varieties has much to do with the ultimate success. Some sorts have done remarkably well in one garden, and yet proved worthless in another, and that too under precisely the same treatment as that which has resulted in the production of excellent samples of other varieties. It is now too late to alter what has been done in the way of changing varieties, unless the seedlings be procured from a neighbour and at once pricked out. What I wish to impress on my readers is the unwisdom of continuing to plant, or to rely exclusively upon a variety that has previously failed. One of the best varieties for all purposes is Major Clarke's Solid Red, and it has never yet failed with me. Leicester Red is nearly or quite identical with it, one being equally as good as the other. We plant the first-named principally for affording medium and late supplies, while for early lifting we plant Drumlanrig Solid White, and Williams' Matchless to succeed it. Cole's Crystal and Sutton's White Gem are also excellent white sorts for early work, and Sulham Prize Pink also succeeds admirably in many gardens. We have failed conspicuously with the latter, but have observed many really fine samples of this variety in the prize collections at various flower shows, especially last season. Carter's Incomparable Crimson is also a fine Celery, and is particularly good for late crops. White Celery being the easiest to blanch may well be grown for the earliest supplies, but they rarely equal the red sorts in point of solidity and quality, and are besides more liable to bolt; consequently one, or at the most, two rows, are all that should be planted, especially in small gardens.

Not a few amateurs prefer to procure good-sized plants for the trenches instead of raising their own. No greater mistake can be made in Celery culture, unless indeed they can purchase them conveniently near, as those bundles of plants without a particle of soil attached to the roots, or as usually sold in the markets, would be "dear at a gift." If plants must be bought, or begged from a neighbour, endeavour to procure them either before they are drawn and weakly, and prick them out at once, or if it can be managed, select sturdy plants about 4 inches high that were raised thinly on a mild hotbed, and since been well exposed to all weathers. Such plants may be at once dibbled into the trenches where they are to grow, and if occasionally supplied with water will make capital progress. Most of the market growers adopt this plan of transferring the plants direct from the seed beds to the trenches, and the best Celery I have ever grown was treated similarly; in fact I consider it one of the best methods of treating the plants, always supposing the trenches can be dug early in the season. I find that when these sturdy little plants receive no preliminary preparation in the way of pricking out they make much the most solid growth, owing to the roots inevitably wandering out of the trenches and into the surrounding soil, thereby becoming less dependent upon the watering pot for sufficient moisture.

When small plants only are available, and which are raised rather thickly in pans or boxes, the requisite number should be pricked out on beds of solid manure, protected and shaded for a time. We usually stand a certain number of frames on a hard bottom, on which is placed a firm layer about 4 inches thick of nearly decayed manure, surfacing this over with about 2 inches of fine soil. The seedlings are pricked out in straight lines, and about 4 inches apart each way. The frames are kept rather close till the plants are well established, afterwards the lights are removed. Then before the plants are in the least crowded they are transferred to the trenches, this being done preferably, though not necessarily, in showery weather. Each plant is cut out with a good square mass of manure and roots, which comes away cleanly from the hard bottom, and very rarely do they give any signs of being much checked by the operation. On no account should they remain till they become crowded before they are planted out, and from first to last they should never suffer by want of water. Any serious check may result either in bolting or an injury to the quality of the Celery. We use plenty of good manure in the trenches, plant in single rows, and keep all suckers pulled away from the commencement, or when they are being planted. During the season a dusting of soot and a little salt is occasionally watered in, these acting as good fertilisers and a deterrent of worms and slugs. On heavy wet land the Celery should be planted nearly on the level, and earthed up, and it will then keep satisfactorily.—W. M.

WHY GRAPES CRACK.

FEW gardeners would object to be termed practical, but on the contrary the majority would consider it a compliment. A few there are who are both practical and scientific, and such men as a rule are both envied and respected. In the latter category I have long included our critical friend, Mr. "Thinker," but his latest dissertation on the causes of Grapes cracking (page 371) has somewhat shaken my faith in him. It seems to me he is airing his rather superficial knowledge of chemistry at the expense of his own common-sense view of the matter. Doctors agree to differ, and I suppose it is the same with professors of chemistry. At any rate in most cases they start with a pre-conceived theory, and all their experiments tend to prove their pet notions to demonstration. As a consequence many of their experiments and discoveries are of little or no practical value. If your correspondent had let Mons. Dutrochet and his theories alone, or at any rate had not too readily become convinced that endosmose was the sole cause of Grapes splitting, I should have been much better pleased with him. As a matter of fact I assert that the primary cause of Grapes splitting is faulty ventilation. Other causes there may be, but in most cases the misfortune of the disfigurement of a crop may easily be prevented by a more intelligent method of ventilating the houses, more especially during dull and maybe warm and showery weather. Of course I hear in my imagination Messrs. McIndoe and "Thinker" say, "This would naturally check the absorption of moisture by the berries, and favours the endosmose theory;" but I do not intend them to pick me to pieces so easily as that. Candidly, are there any practical men besides those two undoubtedly clever men who believe it possible for Grapes, or indeed any other kind of fruit, to absorb sufficient moisture through their skins to cause them to burst?

Having ventured to disagree with such eminent authorities I must perforce give my reasons for it, and in so doing shall support my argument with facts gleaned from better men than myself, both in this and former seasons. On page 402 Mr. W. Thomson writes:—"Then the difficulty crops up of being able to account for the action of endosmose on one Grape more than another in the same circumstances." Just so, and why confine the discussion to the failings of the Duke, when there are

other much more popular, if less noble, sorts that are equally as liable to split? Madresfield Court is liable to crack badly, and so also under certain conditions are Lady Downe's, Frontignans, Muscats, and other fleshy Grapes; but in neither case very rarely from one cause alone. I have known all these Grapes crack badly either from excess of food, from a heavy deluge of water at the roots following an insufficient supply of the same, or from deficient or faulty ventilation alone. Sometimes there is a combination of causes, sometimes only one will do the mischief, and that, too, in a few hours, but that one cause is not endomose. Last autumn a heavily cropped supernumerary Vine of Lady Downe's unfortunately became much too dry at the roots, and the consequence of a good soaking was a loss of the greater portion of the berries, these bursting and decaying in a very short time. The Grapes were nearly ripe at the time, and the house was heated and freely ventilated. There were at least four other sorts of Grapes, all rooting in an inside border, in the same house, but none of them was so dry at the roots, and none of them cracked their berries to any extent. If at the same time as we watered the border we also kept the house close, then the splitting might not have been entirely due to a sudden rush of sap from roots, it would only have been one of the causes.

Mr. Thomson prevents the Duke splitting its berries wholesale by the rough and ready method of gimleting the laterals; but ought he not also, and will he not, add that he pays close attention to the ventilation, as he, I am certain, is well aware that his process unless accompanied by a buoyant atmosphere would only be a partial remedy? Why the Duke split badly in the tent at the Manchester Show ought not to be a mystery to anyone, and Mr. Thomson, I venture to assert, gave the correct solution—viz., the expansion of the fluids, coupled, he might have added, with a softening of the skin of the berries brought about by the excessive heat and moisture in the tent. "A Thinker" is doubtless well aware that Manchester is what is generally termed a very moist neighbourhood, there being, in fact, on an average not thirty wholly fine days in the year. Those who are acquainted with the signs, or, in other words, are weatherwise, are generally not in the least daunted at having a very wet dull morning, as by midday or shortly afterwards the sun breaks out and everything quickly dries and brightens up. As a consequence, evaporation is rapid, but when this is checked by an awning or canvas the case is greatly altered, and we all know, too, what a temperature an exhibition tent will attain. At the 1881 Show the tents were standing in water, and we seriously contemplated fitting up rafts on which to pay a visit to the fruit exhibits. This state of affairs was "too much" for the Duke, the moisture and temperature when the sun shone being very different to what it had experienced during the latter part of its petted career.

These are not mere assertions, but, as I shall attempt to prove, are facts difficult to controvert. The softening of the skin I hold to be an important point, and an increased root-action with the natural result of an increase in the food supply is another, both being due to faulty ventilation. Cracking of nearly ripe fruit, whether of Grapes, Melons, Tomatoes, and hardy trees such as Cherries, Plums, and Gooseberries, rarely (if ever) occurs to a deplorable extent in clear weather, for the simple reason that evaporation is going on briskly. Directly dull showery weather intervenes this evaporation naturally materially lessens, and the consequence is the excess of sap partly finds its way to the fruit and partly back to the roots. One becomes gorged and the other is stimulated into still brisker search and spread, this being followed by a greater supply of crude sap. Coupled with this state of affairs, we may perhaps find either a heated house highly charged with moisture or warm rains falling on the hardy fruits, and this serving to soften their skins as well as causing them to expand, and crack goes the repleted fruit. This theory of skin-softening may not be found tenable, but if heat and moisture are the best softeners of the buds of fruit trees or Vines, as well as the surest stimulus to brisk root-action, why does it not hold good in the case of softening the skins and making them more liable to burst? If it will soften the skins of animals, including the "higher order," as we are pleased to term ourselves, it may be as reasonably expected to similarly affect fruit.

Judicious ventilation, coupled with a moderate heat from the hot-water pipes, is the best preventive of splitting, and if this is not found wholly successful, then recourse should at once be had to other expedients in connection with it. At Wilton House, Salisbury, where the system of ventilating the vineries is as perfect as can well be, no difficulty would be experienced in maintaining a buoyant atmosphere in all weathers, and Mr. Challis informs me cracking never occurs. Yet if I remember rightly a whole house is given up to Madresfield Court Grape. This noble Grape is also much prized at Wiston Park, Steyning, Sussex, where it is kept by Mr. Coombe, the able gardener, in good condition up to Christmas. Here, again, the houses are constructed on a good principle, and although the Vines are planted in a heated and aerated border, Mr. Coombe is positive that good ventilation has most to do with the prevention of splitting and the development of the long-keeping properties of all kinds of Grapes. A high temperature and a steamy atmosphere may swell the berries to a larger size, but it would be a better policy to aim at the production of tougher-skinned, if smaller-berried Grapes. In dull showery weather, if it is not possible to open the top ventilators, then the doors and front lights should be set open, and in all cases the atmosphere may be rendered more fit for the Grapes if a little fire heat can be turned on, as without it the circulation is sluggish. In too many cases the ventilators have to be covered over with some kind of protective material against wasps, and this is certain also to check ingress of fresh air and egress of that which is likely, and very frequently does, injure the Grapes. The skin does not burst in all cases, notably in that of the Black Ham-burgh, but they become rotten, and that is as bad as splitting. Some

partially prevent their Grapes from splitting by checking the supply of sap either by gimleting or cutting a nick in the laterals, others allow the sub-laterals to extend, the excess being thus diverted, and others, again, keep the offending sorts drier at the roots than the rest which may be growing in the same border. Will the endomose theory commend itself to them, or will they continue to rely on their methods of prevention?—W. IGGULDEN.

TUBEROUS BEGONIAS.

THE present is an important time with the Tuberos Begonias, and whether required as summer bedding plants or for indoor decoration they should be well looked after. By strict observance of a few simple rules the cultivation of these Begonias is by no means a difficult task, and raising them from seed, provided good seed has been obtained, is comparatively easy. A short time since I gave a few practical instructions respecting the propagation of these Begonias by means of cuttings and seeds, and with a view of supplementing those remarks I will now briefly refer to their after management.

Cuttings which were taken as directed and inserted singly in small pots will have made sufficient roots to be ready for the first shift; at least such is the case with ours, the average losses being less than 5 per cent. after they were placed in the frame and had received the first watering. The lights were allowed to remain off till the foliage was dry, when they were placed on and kept close for five or six days, removing them for a short time each morning early, to allow the escape of any damp. At the end of the first week air was given by degrees, and finally the lights were entirely removed, a temperature of from 55° to 60° at night being maintained throughout, with a proportionate rise in the day, and still greater by strong sun heat. Perhaps one of the chief drawbacks in the propagation of these is the injudicious use of the watering pot, and as it is by no means an easy matter to direct a stream of water to one particular cutting without wetting its neighbour, it is safest to remove them singly from the cutting frame and water thoroughly, without wetting the foliage, giving the water around the side of the pot, and not dash it at the centre against the cutting as is too often the case. Cuttings may still be inserted of the best sorts, but the sooner this is completed the better.

A word or two as to their after management. Presuming the cuttings have been inserted in 2½-inch pots, the earliest batch will have filled their pots with roots, and a shift from these into 5-inch pots will be sufficient to carry them for some time to come. The pots must be well drained, and the soil should consist of good mellow turfy loam and leaf soil in about equal parts, to which add well-decomposed manure to about one-sixth of the soil, together with a liberal addition of sharp sandy grit. On no account should the soil be of an adhesive nature, and if inclined that way, prepare it three or four days before it is required for use, and spread it in an open airy shed to dry. In all well-regulated establishments, however, dry soil is at hand. In potting press firmly, and after the work is completed give a thorough watering and remove them to the greenhouse. A little fire heat at night will be sufficient for them at this stage, which may be discontinued as the nights become warmer; and here it may be well to remark that as this section of Begonias are essentially greenhouse plants, a high temperature at any time is the reverse of beneficial to them, so that to obtain the best results and have strong, robust, short-jointed specimens, a cool temperature and free ventilation on all favourable occasions are requisite.

The next important point is the seedlings. The plants from the earliest sown batches should now be strong, and with four to eight leaves, and a few of the strongest even more. Our earliest and strongest of these are now in pans, and occupy a position on a shelf near the glass, and are strong, with stout overlapping leaves. Here they will remain till the weather is sufficiently warm to remove them to the pits to harden ready for planting out in the trial ground. The next, and probably the most important work to be done now, is to see to those tubers which are depended upon for a summer and autumn display, and where these are bedded to any extent they will be found not only among the most effective plants, but among the easiest to manage. Perhaps the simplest way is to place them in boxes of cocoa-nut fibre in the way previously recommended, allowing them to start at will, giving little or no water at first, and keep them continually cool. So treated they will make steady but always vigorous growth, so essential to them as summer bedding plants. In these boxes they may remain till they are transferred to their summer quarters, thus at once dispensing with the somewhat tedious and expensive operation of potting, to say nothing of the saving in pots and soil. As the bedding plant of the future for either large or small gardens the Begonia holds a

unique position, surpassing Zonal Pelargoniums in this respect. Happily, too, the Begonia will always make a most natural bed, inasmuch as it cannot be pinched and trimmed into formality. They may also with pleasing results be planted in sub-tropical arrangements, or they may be introduced into the mixed border amongst hardy plants, while those of a drooping nature could not be considered out of place on the rockery with their pleasing blossoms overhanging some ledge, thus forming an attractive feature. When they occupy beds alone, a top-dressing of short manure, spent hops, or cocoa-nut fibre will be found beneficial.—J.

VANDA CATHCARTI.

IN fig. 113 is represented an excellent variety of this fine Vanda, of which flowers were sent us by Dr. Paterson, Bridge of Allan. It has beautifully formed flowers, the transverse bars being finer and richer in colour than the ordinary form, and it is consequently greatly prized

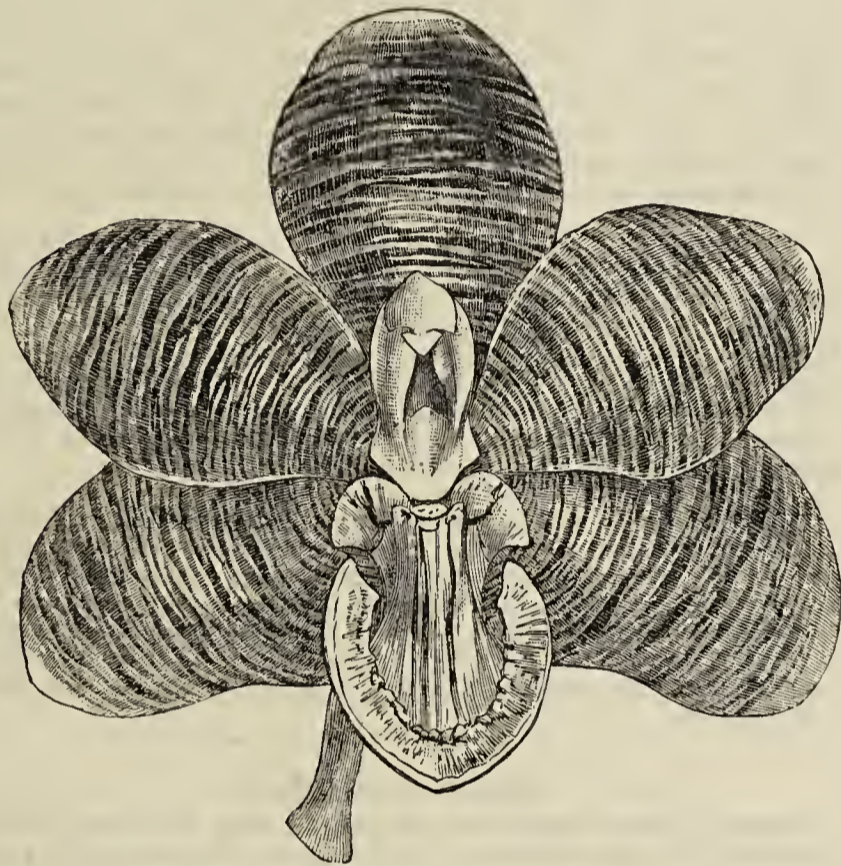


Fig. 113.—Vanda Cathcarti.

amongst the treasures in the choice Stirlingshire collection. Writing some years ago Mr. B. S. Williams thus described the type:—

“This distinct species somewhat resembles *Renanthera coccinea* in general appearance. The leaves are short, broad, and bluntly bilobed, arranged in a distichous manner, and pale green in colour. The spike is drooping, bearing four or five large fleshy flowers; sepals and petals chocolate brown, striped with numerous transverse bands of yellow on the inside; lip large, the centre lobe cordate, having a soft yellow thickened margin. This species has now become established in our collections. Native of Northern India.”

APPLE CULTURE.

EACH spring reminds me that Apple growers are in want of farther information on some points in their trade. It is clear that those who think with me that it is a risk “to put all their eggs into one basket” would find a list of the trustworthy Apples, with the comparative dates about which they come into blossom, a most useful addition to their note-book for the year.

An orchard planted half-and-half with early and late blossomers would be more likely than a haphazard collection of varieties to ensure to its owner a good annual half-crop (and this is as much as we want), owing to the certainty in favour of its escaping in part the season of cold spring wind and the trying effect of morning frosts on wet bloom at setting time.

With this view I have secured the help of a friend in Kent, and if any of your readers will forward to me any notes made during this season I shall have great pleasure in making known, with your co-operation, the results of our inquiry. I am also anxious to know whether the kind of stock used, Crab or otherwise, has any effect on the period of blossom.

There is not time now to dwell upon such other points as the great absence of practical instruction in the art of pruning, and the absolute necessity of wholesale destruction of the insects which are injurious to fruit; but if all growers would at once take example from neighbours who

have set their orchards in order, and comply with the recommendations of Miss Ormerod, the energetic entomologist, who is now attached to the Royal Agricultural Society, depend upon it one year would show a marked advance in the history of the Apple in Herefordshire. These objects might be worthily taken up by our county Agricultural Society.—JOHN H. ARKWRIGHT, *Hampton Court, Leominster.*

THOUGHTS ON CURRENT TOPICS.

I HAVE been wondering of late what that critical individual the “intelligent foreigner” must think of us, and am half inclined to fancy he must be disposed to modify his opinions on the proverbially cold and impassive nature of the British mind, and that after all we *can* be roused into something like enthusiasm by—Orchids. There have been public shows and private shows of them, a conference, and a dinner over them, with page after page crowded and paper after paper filled with them, until those usually stoical individuals, editors, have been impelled to very nearly apologise for devoting so much space to the now fashionable flowers. When it comes to that it may be taken for granted that almost enough fuss has been made at once, and that a change would not be amiss; while it is certain that some of the good old-fashioned Cabbage growers are of the same opinion.

ORCHIDS appear to have been discussed lately from almost every point of view but one, and on this point I am thinking (Editor permitting) of having a “cut in.” There is a great deal that is fascinating about these wonderful flowers, and it is easy enough for persons who have the means of producing them, and who do produce them splendidly, to say in effect they can be “grown anyhow”—only buy a few lots of imported “stuff” cheap, and a gorgeous display will be certain, and some priceless gem possible. When this teaching is applied generally, and beyond the “school” of orchidists, I am very far from thinking it safe, sound, and practical.

I KNOW, from no small experience, that this imported “stuff” is not a mine of wealth to numbers of persons who are induced to speculate in it, and that the half-dead “pieces” cannot be established by anybody, anyhow, and anywhere. They can only be reared by persons who understand them, and who have proper structures for their accommodation; and I wish to make it known in the interests of those purchasers of plants who desire to have a satisfactory return for their outlay, and those gardeners who have to produce this return as soon as possible in the form of an imposing display of flowers, that the most certain, and in the end the most economical, method is to purchase a dozen or two thrifty established plants from a nurseryman instead of expending the sum they cost in as many hundred out of a “consignment” at an auction sale.

A YEAR ago a gentleman was smitten with Orchids, and was induced to spend £100 in a few “lots.” He had no special structures for them, but as good a gardener, taking him all round, as is to be met with in a long journey; but he could not raise those plants, because it was not possible to do so at that time and place, and, as may be expected, neither master nor man is satisfied. The purchase, under the circumstances, was a mistake and a costly one. Had the same amount been invested in suitable plants in a good growing state from a nursery, they might have been grown in the vineries, and there would have been no lack of the coveted flowers now, instead of none, while the residue of the consignment is not worth a quarter the sum that was paid for the plants, saying nothing about the time that has been spent in trying to save them, and the anxiety endured in watching them die. This is all I will say at present on this subject, and if anyone is desirous of opposing my views on this particular aspect of Orchid culture, he is at liberty to do so, and his remarks shall have my respectful consideration.

I HAVE now to turn to a paragraph in which Mr. Bardney asks me to rethink the matter over about hot-water pipes failing—that is, bursting when they are not used. If your correspondent will be good enough to read “valves” failing instead of pipes, there will not, I think, be so much difference between us. I either said, or intended to say, that valves fail because they are left so long unworked. I have had the best proof of this, and I am convinced there are hundreds of valves in hot-water pipes at this moment that are inoperative, if put to the test, from no other reason than that as they have not been wanted they have been forgotten; but the time may come when they would serve an important purpose, if in order; and to keep them in order, they should, like everything else, be worked occasionally. If Messrs. Foster & Pearson have done no more than direct attention to that simple matter they have done good.

MR. BARDNEY points out that pipes left full of water in winter and not worked may be burst by frost. This is true, and a few years ago I saw a never-to-be-forgotten example of it, and it was a little curious that the gardener, who is a great man in his way, asserted the injury was done by the expansion of the water when the ice melted, as heat expanded, while cold contracted everything. In this, however, there was a slight flaw in his philosophy. Unused water pipes should be emptied in winter where they are in positions to which severe frost has access, but unused boilers and pipes are best left full of water in summer to prevent the oxidation of their surfaces; at least that is what I think about the matter, but am open to correction as usual.

RELATIVE to the subject of Grapes splitting, I am glad and not surprised that Mr. William Thomson admits the action both of endosmose and exosmose "when circumstances favour that action." It is just a question of circumstances, and I have still to say that moisture passing through the skins of fruit has caused ten times more injury than has yet been generally admitted. As I have never said it is the sole cause of the rupturing of fruit, Mr. Hugh Henderson's criticism on page 422 falls light as a feather. I actually had observed that Grapes and cut flowers with their stems in water really do draw a supply through the "ordinary channels," and possibly Mr. McIndoe has observed the same interesting phenomenon. But supposing Mr. Henderson, instead of inserting the cut stem of a lateral bearing a bunch of Grapes in water, leaves the stem outside and immerses the Grapes in water or vapour, and then they imbibe too much for the resistance of the skin, will it be through the "ordinary channels?" Does he seriously imagine that moisture cannot pass through the skins of fruit? If that is his notion he must have some original ideas on fruit shrivelling. Again, if he plunges a handful of Fern fronds in a vessel of water, leaving the stalks outside, and these fronds remain fresh longer than a similar handful with their stems alone in the water, what about the "original channel" then? Water passes through the roots, stems, leaves, flowers, and fruit under favourable circumstances; and if he will put a Cucumber in water with the stalk protruding in the driest of air, he may find that moisture passes through the skin of the fruit fast enough, and it is the same with French Beans. I think I have followed him fairly through the main points in his argument, and must leave the subject at present with thanks for his contribution.

"SCIENTIA" is rather hard on bonemeal on page 417. Because it did not improve his lawn the first season he concludes it is not of service to plants grown in pots for one year. I think that it is a fair way of putting it. While there cannot be a doubt that such rapid stimulants as nitrate of soda and sulphate of ammonia are far more effective than bonemeal for such plants as Balsams, Cockscombs, and the like, also for Cucumbers, Lettuces, Onions, and similar shortlived crops that have no "wood" about them, it does not follow that it is not of benefit to Chrysanthemums, Pelargoniums, and Cinerarias, and a year's experiments on a lawn is totally inadequate for proving the contrary.

I WAS once puzzled with the results of a similar experiment instituted for an agricultural purpose. The bonemeal on grass was particularly inoperative. The next year it was tried mixed with soil in which grass was sown and grown in pots, and there it proved useful the same year. The difference was due to the constant presence of water in the soil, which dissolved the gelatinous matter of the bones, more water being given than would fall on the same area of lawn in two years. The winter rain was necessary to liberate the phosphate of lime in the bones that had been for much more than half their time dry on the lawn through the summer.

BONEMEAL is good for all plants of a ligneous nature that have time enough to produce woody stems, such as Vines and Chrysanthemums, in a season, but it is not the best to rely on it alone, and an ammoniacal manure should be used as well, not only because it is good in itself, but because of accelerating the action of the phosphatic. The two in combination are more effectual than either used separately. Before the use of bonemeal is proscribed this view of the matter—the combination of manures—must have due consideration.

"A READER" asks me to say something more about Liliams and the effects of stem roots on the future bulb. The letter of your correspondent on page 433 indicates that the writer of it knows at least as much about Liliams and their culture as I do, and I consider he has contributed one of the most suggestive and useful articles on the subject that has appeared for many a day. He does not write so confidently, not to say dogmatically, as Mr. E. Jenkins does when he pronounces the dictum that "surface roots are only produced when the proper roots are defective," as "mere fiction." I am one of those who believe there is as much of fact as of fiction in that statement when its full significance is comprehended.

THE word "defective," as I use it in connection with this subject, is not limited to the paucity of roots, but to the inability of the roots, whether few or many, to extend freely in a suitable medium, and derive all the sustenance that is required for the support of the plant. The roots of Liliams in pots are necessarily restricted, and the obstacles they encounter conduce to the production of supplementary roots from the stem.

LET anyone take two dozen bulbs from a bed in October, plant a dozen of them at once in free soil 2 feet deep, resting on a moist base, and keep the others out of the ground till June, as I have done, and pot them. The probability is that the former will produce no stem roots, but it is not possible, in my opinion, to get spikes from the latter and support flowers on those spikes without stem roots. And again, experiments and observation have led me to the conclusion that, however good a bulb may be, and however well grown in a pot, the plant proceeding from it is far more likely to produce stem roots than a similar bulb planted out, because the roots of the pot are cramped, small, and defective in foraging capacity in comparison with others that have an unrestricted range, and can obtain all the support required to perfect the plant and future bulb.

I HAVE no wish to support "Scientia," but when Mr. Jenkins observes that 95 per cent. of imported Liliams commence basal root-action first, I have to reply that it depends on circumstances. I have seen 5000 bulbs of *L. auratum* planted at once, and 95 per cent. of them did exactly the reverse, and what is more, 75 per cent. never produced basal roots at all, hence decayed; but the result would have been different and very much better if the roots had been started in fibre, as recommended by your correspondent, as was proved by a number out of the same consignment. Mr. Jenkins evidently knows what he is about, but I do not know the weight of his evidence for assuming that the writer to whom he refers has had comparatively slight experience in "handling" Lily bulbs, but I rather suspect he is not a novice, though in one respect I consider his science is faulty.

BUT I am neglecting "A Reader." He only asks me one question—namely, if the finest Liliams I ever saw that produced no stem roots were equally fine the following season. They were, and continued similarly vigorous for two or three years, then gradually declined, I presume from the natural exhaustion of the soil; but they have not yet got weak enough to produce stem roots, though I shall not be surprised if some of them produce them this year. I tried an experiment with a dozen bulbs this spring. Six of them were embedded in fibre till basal roots bristled from them, then planted in deep soil; the other six, without any basal roots, were potted in rather small pots. There is not a stem root visible on those planted out, but four out of those potted produced them before the stems were a foot high. If those planted out follow suit I will not fail to record the fact, but I do not expect they will do so, for I shall not water them daily to make the surface of the soil and base of the stems moist, as the roots can find the moisture the plants need below.

"A READER" significantly observes he does not think the foliage of Liliams useless. Certainly it is not useless, and the better it is the greater the secretion of nutrient matter in the bulb or the stem. It was this I had in mind when I thought "Scientia" in error when he suggested the removal of stem roots. They are of service when produced, but I regard them as adventitious and only produced when required for the adequate support of the plant; and I yet await the assurance of some authority that they are produced on the best developed plants in their native haunts.

ANOTHER point, and an important one, demands the thoughtful consideration of readers generally. I previously hinted at the too common mistake of drying the bulbs and potting late. "A Reader" has said what I intended saying, that the right time for repotting Liliams is as soon as they cease flowering, keeping the foliage fresh by syringing and shading if needed for a time; there is then no fear of weak root-action, nor, under good management, of strong stems and fine flowers.—A THINKER.

BEESON'S MANURE.

THIS is a valuable manure; we have been using it for two years, and find it not only very stimulating but lasting in its results, and this makes it extra valuable. In potting our Strawberry plants last autumn we used a peck of this manure to every wheelbarrow-load of soil, and we are now reaping the benefit of it in the extra good crops produced. Some old Peach trees which were showing signs of weakness had a good top-dressing of this manure forked into them last spring; they made fair growth afterwards, but they are showing the advantage of it more now, as they have begun growth stronger, and formed more fruit than we have seen them do for a number of years. Cucumbers continue bearing for a surprising time when a little of it is mixed with the soil, and Roses are also benefited in the same way. Last year was the first season we used it for these. A little was given with the soil, and some more was put on afterwards as a top-dressing just under the surface of the soil, and our Roses are more vigorous and healthy just now than we ever had them. It may be applied with decided advantage to garden crops generally, and no one need be surprised at this, as its principal ingredient is bones; and of all manures for good and lasting results there are none to equal bones, as they always produce substantial growth and never rob the soil.—A KITCHEN GARDENER.

FRUIT TREES IN SPRING.

ANY good practical article pertaining to hardy fruit culture is always appreciated, and the remarks by Mr. Wright at page 409 could not appear at a more seasonable time, for at this period of the year fruit trees are liable to be neglected, and for this neglect no after summer treatment will compensate. The early arranging and stopping of strong shoots, or any which may require it, should never be neglected, and I strongly advise a systematic course of treatment, such as is described on the page quoted. If the trees are examined once or twice a week it is far better for the trees, independently of the time saved if the trees are neglected until the summer is far advanced. Thinning the fruit is often much more neglected than arranging the shoots, but this should not be, for where a superabundance of fruit is set on wall trees, as well as espaliers, pyramids, or bush-trained specimens, and especially of those varieties which are required for dessert, a systematic course of thinning should be carried out, as the fruits will be much finer and be more appreciated than a larger

number of small fruits. Fine fruits when well ripened are also of much better flavour than small ones. The safest guide when to thin is to make sure of the crop and thin accordingly. The size of the tree, the size of the fruit for the variety, and the general health of the tree, should all be taken into account. By the present prospect of affairs, if the thinning of Apples and Pears is not carried out freely this year, there will be a superabundance of small fruits that will not be worth storage room. The force of this will be seen where the thinning process is not attended to when the time arrives for placing presentable fruits on tables.

Next to thinning the fruits and stopping and disbudding the shoots, training the trees should be considered, as this must also have timely attention. The young main shoots which are to form the framework of the tree must be nailed or tied in as soon as they are in a fit state for handling, for if this is neglected the shoots are not trained in with such ease, and the future appearance of the tree is greatly marred. From the first year when the tree is planted the future form should be fixed in the mind. When the trees are planted in the open to be grown as pyramids or bushes the natural habit should be taken into account, as all varieties have a style of growth peculiar to themselves. Those varieties which have a naturally pyramidal habit must be grown as such, and when of a drooping or spreading habit as a bush shape. When the trees are grown against walls they can be managed with pruning and stopping the shoots, so that the main branches are in a suitable position. When a Pear or Apple tree is being trained each main branch must be trained out from the main stem at a certain angle and carried right out to the top of the wall or to the given space allotted to the tree, so that the branches will not interfere with each other in any way. Train the main branches of Plums, Peaches, Cherries, and Apricots on the same principle, and nail or tie in the side or lateral branches, so as not to cross or interfere whatever with their neighbours. If required for filling up or extending the tree a clear headway should be afforded.

After the fruits are set and swelling attend to mulching the borders. In some gardens time and means are at command for supplying trees which have a prospect of a fair crop of fruit, with two or three good soakings of sewage during the growing season. When this is the case the borders should be mulched after the first watering with about two inches thickness of short manure. This will benefit the crop very much, as it will cause the fruits to swell to a large size. When no means are at command for giving the trees sewage mulch the borders immediately after a heavy soaking of rain. This is not practised nearly so much as it deserves, and it is astonishing what a heavy weight of fruits, Black and Red Currants, Raspberries and Strawberries produce when treated in this way.

The most effectual application we have found for keeping the foliage free from insects is 1 quart of tobacco water to 3 gallons of soft water, heated to about 120°. The trees should be well syringed with this in the evening, and again early the following morning with clear water. All trees on walls after the fruit is set and swelling are much benefited by being syringed thoroughly with clear soft water, as it removes the old and decaying petals of the flowers —A. YOUNG.

OUTDOOR MUSHROOM CULTURE IN YORKSHIRE.

AT Col. Gascoigne's, Parlington Hall, Leeds, there are some splendid Mushroom beds in full bearing, made on the principle advocated in "Mushrooms for the Million." I was over the other evening to see them, and was perfectly astounded at the great quantity of fine Mushrooms that almost covered the surface of the beds, or rather ridges. The experiment is being carried out on commercial principles by the gardener, Mr. Dunn, at Col. and Mrs. Gascoigne's special request, so as to prove to those of their tenantry who may be disposed to go into the Mushroom trade, that it can be made a profitable business. Over £40 worth has been already disposed of, the average price being about 9d. per lb. wholesale. Spawn purchased from several leading firms was used, some £8 being expended. There are about 160 yards, lineal measure, in the beds. The spawn varies as to time in coming into bearing, but as a rule all the lots are fairly good.

Since writing the above, Mr. Dunn informs me that during the week after I called at Parlington he has gathered 315 lbs. of Mushrooms, making a total of 1244 lbs., which have been sold for £50 3s. 10d. The beds have now paid themselves and all labour, and if they continue another month good profits will be realised.—H. F. C.

POTASH AND POTATOES.—It is found by experiment, that while the different forms of commercial potash increase the crop of Potatoes they impair its quality, making the tubers watery and spongy. It is very likely that ashes have the same effect. The trials of Potatoes on newly cleared land and that recently burned over have generally disappointed expectations, at least in the quality of the tubers. By the way, it is a noteworthy fact that the commercial importance of the Potato crop is of recent date, and since much of our land has been considerable time under cultivation. Now the Potatoes which sell the

highest in all markets are from sections where there can be comparatively little new land put in this crop. The far western Potatoes are not so good as those grown farther east. Here a moderately firm soil brings better Potatoes than one that is soft and spongy.—(*Florida Dispatch.*)

CONTINUOUS-FLOWERING PLANTS.

THERE is a feature in plant culture which, so far as my observation extends, has been very much overlooked, I refer to the continuous-blooming qualities of many plants which we cultivate in pots. The generally received opinion, and which is acted on as closely as possible, is this, that if a certain plant is wanted in flower for an extended period, the cultivator must provide a certain number of sets of plants in order to secure the end in view. Anyone who is occupied with the demands of a country garden knows full well that the chief trouble is the potting and shifting of flowering plants, and if we can save even one-third of this most necessary routine labour without affecting the supply in a manner otherwise than beneficial, I think we gain in a very decided manner. I know in my own experience that, instead of the ordinary demands decreasing, there has been a very decided increase in the demand for cut flowers, while the labour allowed has been in the opposite ratio to which gardeners would like it to be. We are of necessity obliged to make the labour go as far as possible, and one of the greatest labour-saving schemes is that of making one set of plants do duty for two or even three. One of the greatest improvements which has been wrought in plants during the past dozen years or so is the habit of continuous flowering which has been noticeable in them. Of course certain cultural treatment must be carried out in order to develop this habit and make it of value to a gardener.

I sent for your inspection several weeks ago examples of a Chrysanthemum which had been blooming profusely for several weeks, and again I send you another small boxful of flowers to show that the plants are in unabated vigour, and, if anything, more floriferous than ever. I cannot guess the number of dozens of fine blooms that these plants have given us, nor can I say how I appreciate their usefulness. I have tried a number of Chrysanthemums, but none I have experimented with has in any measure approached the good qualities of Mrs. C. Carey, and the only reason I can give is that this habit is a varietal one. It is several years since we obtained a family of Zonal Pelargoniums that had the capacity of flowering through autumn, winter, spring, and summer. The only necessary points to follow on the part of the cultivator being to give the plants a suitable temperature for the various seasons, plenty of food, and a rigid system of cutting the trusses as developed. Bouvardias have also, in the case of a few varieties, this perpetual-flowering habit. So have some Carnations, some Tea Roses, &c. Of late years, largely, I am inclined to believe, on account of the treatment to which the plants are subjected, our Richardias can be had in flower at any season; not one plant this month, and another two or three months afterwards, but the same plant at any season. Practically, the meaning of this is, that if I can have thirty plants to do the work of ninety, I have, in consequence, so much labour power and so much more space at command for other plants. We can extend the system to other plants, such as to Cucumber and Tomatoes, and to foliage plants, as is often done, or wherever it is possible to obtain the same amount of produce the system is not only permissible but commendable.

I will indicate very briefly the main points to be observed in obtaining good results from this system. A simple compost is of great importance. Pots comparatively small, and with the soil well firmed so as to form a store for the roots, is also necessary. Then, in order to keep the plants growing, they must have in the cold season a sufficiently high temperature to ensure this, and, in addition, deficiency of water or of food in the shape of manurial agents must be guarded against. The last item I shall mention is to remove the crop as it becomes ready. This is also of some importance in securing the end in view. I do not know whether I have made the matter sufficiently clear to any who have not tried our plan, and who would like to do so, but shall be glad to elucidate the matter more fully if anyone may find a difficulty.—R. P. B.

[The Chrysanthemum flowers referred to were as fresh as could be imagined.]

STRAWBERRY BEDS.

AS the planting season will soon be here, may I be allowed to offer a few remarks on a method of growing Strawberries in an annual bed, which has been practised here with satisfactory results?

I do not know whether it would be suitable for cultivation on a large scale, but it is an admirable plan for small gardens and for those who require a quantity of fruits of extra size and quality. Our system—which could, of course, be slightly modified if necessary—is to plant in beds 4 feet wide with a 2 feet pathway between each pair of beds. Thus bed and pathway occupy 6 feet. This is rather too wide, and 3 feet for the bed would be more suitable for gathering fruit. The land is worked into good condition previous to planting, and if required is well manured. For heavy land some lime rubble or ashes are useful. For light land a few turf sods are excellent if obtainable.

The plants should be placed 3 inches apart, and the rows running at right angles to the pathway 1 foot apart, or dwarf varieties such as Rivers' Eliza and Wizard of the North 10 inches. President and Sir Joseph Paxton will be better 15 or 18 inches. When planted, if in dry weather, water and shade for a few days. Do not allow the land to bake, but use the hoe, which may be done without treading on the bed.

For obtaining a supply of runners a single row of young plants should be set apart almost exclusively for this purpose, and should be the same length as the proposed bed and the same width, well worked. When the runners appear layer them carefully by hand, and when the first batch is ready take up and plant in the bed, layering the second batch. In ordinary weather each will be a fortnight or three weeks from layering to time of shifting. The last layered at the end of August may remain where layered, and will produce an excellent crop. The others will require very little attention except occasional weeding and the surface soil worked with the hoe. By this means a magnificent crop of fruit will be obtained much earlier and in far greater abundance, size, and quality than by the old row method.

For the second year take three rows out and plant them elsewhere, leaving every fourth row only. These should be well mulched just previous to blooming with half-decayed stable manure, the food ingredients of which will be washed down to the roots by the rain, and the litter remaining will serve as a bed for the fruit, preventing the earth from soiling the berries. The first year's beds do not require any litter except round the outside next the pathways, as the leaves and runners will keep the fruit perfectly clean. If left for a third year—which we do not advise, as the fruits are smaller and the beds more difficult to manage—care should be taken that the plants have sufficient room and are free from weeds and runners. It is necessary, to carry out this system fully, to plant a fresh bed every year; but when once the result is seen there will be no inclination to neglect the planting annually.—J. LOVELL, *Driffield*.



MR. PRINSEP, The Gardens, Buxted Park, Uckfield, informs us that all the flowering growths of the *DENDROBIUM NOBILE*, which we figured last week, were removed the day after the plant was returned from Kensington.

— MESSRS. CARTER & Co., High Holborn, send us flowers of their EMPRESS POPPY ANEMONES exceedingly handsome in size and colours—the finest, indeed, that we have seen. The tints are most varied—purple, crimson, scarlet, rose, pink, and blush to white, from the richest to the most delicate hues. Messrs. Carter have had these Anemones very fine in previous years, but this season they have surpassed their earlier productions.

— EXHIBITION OF TULIPS IN LONDON.—It is the intention of Mr. Samuel Barlow, J.P., the President of the Royal National Tulip Society to exhibit at the meeting of the Royal Horticultural Society on June 9th a selection of his finest Tulips from his famous beds in his garden at Stakehill House, Castleton, near Manchester. So late are they in flowering this year—later indeed than they have been for many years—that Mr. Barlow could not show a single flower from Stakehill at the Royal National Tulip Society at the Botanical Gardens, Old Trafford, on Saturday last, and his beds—three of which will comprise some 4000 blooms—will not be at their best for another ten days at least; and it may be said of them that for years past they have not promised better. Mr. Barlow's desire in sending Tulips to London, is to place before the London public illustrations of the very best types of this gorgeous flower, in order that it may perchance lead to a renewed interest being taken in them in the south of England.

— REFERRING to our notice on the TAM O'SHANTER HONES in our issue of the 14th inst., Mr. Montgomerie has desired us to mention that he and his predecessors have been the producers of the celebrated qualities of hone stone, esteemed in the market as Water of Ayr stone since 1789, the date on which the quarry and name originated; and that in consequence of a decision in court depriving him of the exclusive use of the name, and throwing it open to all and sundry, he resolved to change the name to that of Tam o'Shanter Hone in order to protect his interests and the character of the stone and the public from being imposed upon, as now all his inferior stone and those hitherto rejected at the quarry, and all hone stone, however inferior, found in the valley of the river Ayr can now be sold under that once famous name which he has abandoned.

— UNDER the title of "WALKS IN EPPING FOREST," Mr. Percy Lindley has issued (123, Fleet Street, E.C.), an entertaining handbook to the principal features of the people's favourite resort in the east of

London. There are many beautiful portions of this Forest which are comparatively little known, and descriptions of these—together with much historical matter and particulars of the fauna and flora—are given in a very agreeable style, as can be judged from the short chapter on another page. The book is very liberally illustrated and extremely cheap.

— "G. C. E." writes:—"I propose going to California with the intention of buying land and going in for fruit and Vine-growing, and I should be very much obliged if you, or any of your readers, will give me any information on the subject, and refer me to any books published on the subject, and treating on budding, grafting, seeding, pruning, &c. I also want information as to planting timber trees and underwood likely to do in that climate, and how best cultivated?"

— A STATUE of DARWIN will be unveiled in the great hall of the Natural History Museum, Cromwell Road, on Tuesday, June 9th, at twelve o'clock, when Professor Huxley, President of the Royal Society, on behalf of the Memorial Committee, will formally transfer it to the care of the Masters of the Museum, who will be represented by His Royal Highness the Prince of Wales. Places will be reserved for the Committee and subscribers to the memorial, but the greater part of the hall will be open to the public during the ceremony. The statue, which has been executed by Mr. Boehm, R.A., is of marble, and seated, rather larger than life-size; it is pronounced by those who have seen it to be an admirable likeness as well as a fine work of art.

— THE annual display of CALCEOLARIAS AT BEDFORD HILL HOUSE, BALHAM, the residence of J. Brand, Esq., has gained for the gardener, Mr. Rapley, considerably more than local fame as a skilful grower of these handsome and varied plants. But this season he has surpassed his previous efforts, and has provided an exhibition of unusual beauty. The plants are vigorous but dwarf compact specimens, bearing dense heads of large flowers most varied in colours, from the softest shades of yellow or cream to the richest crimsons. Many are charmingly spotted or netted, and in others the colour is disposed in bold central blotches on a pale ground. The flowers are substantial without being coarse, and in form a large majority would amply satisfy the most exacting florist. As decorative plants well-grown Calceolarias of a good strain cannot be surpassed, and Mr. Rapley deserves much praise for the patient perseverance which has enabled him to render the Balham strain so celebrated.

— A RECENT number of the *Melbourne Review* contained a very interesting article on the CLIMATIC VICISSITUDES OF VICTORIA, by Mr. G. S. Griffiths. Referring to the researches of Baron von Müller, the writer says that the learned botanist has discovered striking testimony to the occurrence of rapid climatic changes in Australia. First he found that during the older Pliocene period the Australian flora was lauraceous—plants of the warmth-loving Laurel family predominating. In the newer Pliocene deposits these Laurels have been swept away, and are replaced by a meliaceous flora and by plants of a still more tropical character. Once more an active vegetation disappears, and in its stead the Myrtle family, with its characteristic Eucalypts, overspreads the whole land, and still keeps possession. What great climatic vicissitudes (Mr. Griffiths asks) could rob a region of a whole suite of vegetation and repeat the act twice within a brief period? He thinks this evidence to be strongly corroborative of the occurrence of interglacial periods."

— "THERE are, however, other facts. The PEPPER PLANT (*Drimys antarctica*) is a native of the colder regions of the globe. When the Glacial epoch set in and a chilly temperature advanced to the equator itself, this plant marched forward with it in the same regions. When the interglacial warm period came on the cold temperature relaxed; but wherever the Pepper Plant had access to lofty mountains it retreated to their cold peaks, and so secured itself permanently in its new home. Then it died out on the hot plains, and thus Mr. Griffiths explains its existence upon the lofty ranges of New Guinea and Borneo, but nowhere else until we get far down into the colder regions of the southern hemisphere—its natural habitat. In the same manner cold-loving European plants crossed the hot tropics, unknown ages since, but probably at the same epoch, and established themselves in Australia; and so, when botanists in exploring the Australian mountains climbed to an altitude of 5000 feet, they met thirty-eight species of European plants, isolated from their fellows, and thousands of leagues from their home."

— A COMMISSION appointed by the French Government to inspect the FORESTS OF TUNIS, and to make proposals with regard to afforestation, has recently presented its report. In the districts south of the

Medjerda Valley the so-called forests are mere brushwood, composed of the Callistus, Juniper, Aleppo Pines, and small Oaks. The land is cleared for pasturage and cultivation, and only here and there are seen groups of larger trees, such as Alpine Firs and Olives. Nothing is therefore to be gained by preserving here, and the cost would be very great; but it is nevertheless recommended that some steps be taken to protect trees and shrubs which exercise a beneficial influence on the *régime des eaux*. The Kroumis Mountains to the north are of a totally different character. Magnificent forests of old trees exist in them, which attain as great dimensions as those in the best French forests. They contain magnificent Cork trees and White Oaks (*Q. Mirbeckii*) with trunks 3 or 4 metres in circumference and 10 to 15 metres in height to the first branches. One forest covers 100,000 hectares, and contains also the Alder, Willow, wild Cherry, Beech, Poplar, Holly, Bay, and the Tamarisk. This and some neighbouring ones should, the report advises, be strictly preserved. The bark and wood of the Oak and Cork would repay the expense.—(*Nature*).

NOTES FROM MY GARDEN IN 1884.

No. 4.—HERBACEOUS BORDERS.

IN the endeavour to keep my borders gay I am obliged to have recourse to other plants besides hardy herbaceous plants, but only to a limited extent. In the early spring I use Tulips, Hyacinths, Crocuses, Scillas (all of which, however, may be classed amongst hardy things). In the summer I occupy the spaces where these have flourished and died down with some annuals and a few Zonal and Bronze Pelargoniums scattered up and down in the borders, the latter especially being useful in lighting up the general green appearance of the plants. Need I say what a trying summer last was for these kind of plants; how annuals withered away despite all watering; how Pelargoniums refused to move, and were no larger at the end of the season than they were at its commencement; and how the only things one could really depend upon were the "hardies," those especially which had been long established? The newly planted ones were in the same plight as the Pelargoniums; they wouldn't move, they wouldn't take hold of the ground, and the gaps, about which so many are writing, are due to this cause, and yet it revealed some things which were new to me. I have some Irises planted on the very hottest spot I think that I have in my garden, and they have never bloomed until this spring. Am I confusing things that are distinct when I say that the hot year must have so ripened the roots that they were induced to flower?

Amongst the brightest and earliest of spring flowers is *Doronicum austriacum*. The rich golden yellow of the starry flowers makes it a conspicuous object in the borders, and, as I have said, it is also admirable as a pot plant. I had taken mine to pieces last year for this purpose, and that, combined with the dry season, had not tended to make it quite so strong, but it has quite recovered itself, and is now in full vigour. *Doronicum Clusii*, which I am told is very like it, but a little later, I have not as yet grown. Another very pretty class of plants is the *Epimedium*. *E. concinnum*, which I have, one of my mementos of a delightful visit to Belvoir, is exceedingly pretty, almost like an Orchid, while the foliage is also very pretty. *Mertensia virginica* I have as yet small, but why an intensely blue flower should be called the American Cowslip I am at a loss to imagine. Then there is just opposite my window a stately group of Crown Imperials which have gone on increasing from year to year, and have never, even in the most unfavourable seasons, failed to flower in great perfection. They are in a somewhat shady position, and a clump of the Japanese Anemone, *Honorine Jobert*, has established itself amongst them. They push their way up through the roots, and the Anemone asserts itself later. I have generally given this latter a good mulching in the autumn, and this may be one of the reasons why the Crown Imperials are so fine.

Nothing could exceed the beauty of the Delphiniums last season. The flowering stems were in some instances 6 or 7 feet high, and the brilliant blue which distinguishes them makes them very conspicuous objects. As a rule I prefer the single varieties, although such varieties as *Madame Henri Jacotot* and *alopeuroides* are well worth growing, but I do not think that they can compare with *Cantab*, *Madame Chaté*, *nobilissimum*, *Enchantress*, and especially *Belladonna*. This last is not so vigorous, as a rule, as some others, at least I thought so until I saw a magnificent clump of it with my friend Mr. Tymons in his delightful garden at Basten Hill near Dublin, where a plant 4 feet through was a sight not easily forgotten. There is something so exquisitely beautiful in its azure blue, as I hardly think is to be met with in any other plant; not so deep or rich as in some of the *Gentians*, but there is a delicacy in it which I think they do not equal. They are, as a rule, amenable to culture, and some of my clumps have been undisturbed for many years.

Aquilegias also I largely depend upon for gaiety in the borders at certain seasons, and there is now such a variety of them that they make the borders look very gay, having originally planted *chrysantha*, *cœrulea*, *chrysantha hybrida*, and *cœrulea hybrida*. They have with their great facility of crossing, yielded a number of crosses, which sowing themselves about the border, are delightful in their variety. So readily do they cross, that I have found the greatest difficulty in getting true seed of the finest of them all, as I think, *chrysantha*, but as it gives flowers later than most of the others, one can by watching and securing the seed pod in a

muslin bag, manage it. Their graceful habit and strikingly coloured flowers make them a great favourite with us, and as they are very easy of culture no garden ought to be without them. The hot season suited them also, and they were very fine.

The same cannot, however, be said of another class of plants of which we are exceedingly fond, I mean Lilies. Some of them, it is true, did well, but others have failed to put in an appearance this year at all. Such kinds as *Humboldtii superbum* and *Batemanniæ* appeared to have suffered for it, while others were very fine. We have some grand clumps of *Lilium candidum*, the common white Lily, about which so much has been said, and with which some seem to have experienced so much difficulty. I was accosted one day last summer in the conservatory at South Kensington by one of our most successful Lily growers, "Do you grow *Lilium candidum*?" Yes. "How do you grow it?" Well, all I could say was it grows itself, and so truly it has done with me. It gets very near the surface of the ground, and I suppose the top-dressing that I gave the bed helped it, for I have never seen my clumps look finer than they do now. It is sometimes said it will not bear transplanting. Last autumn I got a clump, being greedy, from a neighbour's garden; it was removed *en bloc*, and it looks now as vigorous as any of the others. I see it all about here in the most differing situations flourishing most vigorously. There is one row of small houses facing the west, where the gardens are broiled by the afternoon sun, and yet there it does well, while that from which mine came is shady, and yet there they flourish to perfection. There seems to be something capricious in its movements, and I believe the only advice one can give upon it is that of Lord Melbourne in politics, "Can't you let it alone?" *L. lancifolium rubrum*, which has now been in the ground some seven or eight years, seemed to rejoice in the warm summer, and has increased largely in size and number. On the other hand, *L. superbum*, or the Swamp Lily, did not, as its name would imply, like the drought; it flowered, but did not by any means reach its usual height. *Lilium testaceum*, one of the stateliest of our Lilies, did well, and, to my mind, there are few that surpass it in effectiveness. The white *L. Martagon* did well, and from the clump, with an addition of a fine bulb which my friend Mr. Tymons sent me from his garden, where it flourishes like a weed, I hope to have a fine display of it. As usual, *auratum* disappointed me, as it does a good many people, and we cannot all command such situations and soil as Mr. McIntosh and Mr. G. F. Wilson. Neither did *L. Batemanniæ* flourish as it ought to have done, but to my surprise a bulb of *L. giganteum*, which I had from Mr. Noble of Bagshot, threw up a spike of bloom. But oh! how the snails did punish the foliage! so much so, that I doubt very much whether it will flourish this year as it did last. Amongst other Liliaceous plants which gave me a great deal of satisfaction was the double-flowered *Hemerocallis*, it is such a stately-looking plant, and the flowers are so much more durable than the ordinary Day Lily, that it is well deserving of a place in any garden. I may say the same of those hardy Amaryllids which I have before mentioned, the varieties of *vittata* raised by Mons. Souchet of Fontainebleau. They have now been in their place for six years, and the flower stems have each year increased in size, and a more striking plant for a warm border I do not think there can be. It is a marvel to me that they are not more grown. The winter at Fontainebleau is much more severe than we have it in the south-east of England, and yet they continue in the ground there all the year with no other protection than a few leaves placed over them.

Pyrethums, single and double, a few only of each, of course, make a very effective display, and the single ones are especially valuable for cuttings for vases, and there are so many good colours amongst them that they effectively answer many purposes in decoration. They are more lasting than the single Dahlias, and their foliage is in itself very pleasing.

After July there is a lull in the herbaceous garden—at least I have found it so, but this may arise from ignorance—until the autumnal flowers come in, and it is then that I have mainly to depend on annuals for brightness in the borders. A judicious selection of these, of such kinds, for instance, as the different varieties of *Coreopsis*; the annual varieties of *Chrysanthemums*, such as *Dunnetti*, *carinatum*, and the *Corn Marigold*; *Linum grandiflorum*, *Sweet Sultan* in its various shades of yellow, purple, and white, *Salpiglossis*, *Gaillardias*, *Corn Bluebottle*, &c., generally make the borders bright, but last year was a sad season for annuals. They did not grow, and their blooms were few and poor. No amount of watering will make up for the natural watering of the clouds; hence I was, comparatively speaking, disappointed. With the autumn there are a few of the herbaceous plants which make a telling effect: such plants as *Telekia speciosissima*, the *Tritomas*—or *Red-hot Pokers*, as some very unpoetically call them—the *Salvias*, especially *fulgens* and the lovely blue *patens*, *Bocconia cordata*, *Celsia cretica*, which was very fine with me last year, a few single Dahlias, and my very favourite flower *Senecio pulcher*, all come in to lighten up the garden, while the few plants of *Zonal Pelargonium*, which take up the place of the Hyacinths, Tulips, and other bulbs, make it look bright and gay. These last are the old plants that I have had already done duty in the greenhouse, and are now turned out to flower and then die. They are much more free in their blooming than cuttings, and do not so much run into leaf. Of my *Gladiolus* I have already written, and can only repeat that they gave me a great deal of enjoyment last season. Of course, amongst autumn flowers one cannot omit the *Asters*; they are sufficiently numerous and strong-growing to fill all the space that I have at my disposal for all my plants, if I am to grow them all, and therefore, as in other things, I am obliged to content myself with a selection. I grow the old-fashioned *novæ-belgiæ*, *Amellus*, *Chapmani*, *bessarabicus*, *ericæfolia*, and one or two others, and

also the very beautiful *Platycodon grandiflorum*, closely allied to the *Campanulas*.

Amongst failures I have to record that of *Tricyrtis hirta*. It grows well, but it never blooms until so late that the flowers are good for nothing, and the leaves get injured by the frost. I have tried it for several years, and have never bloomed it satisfactorily. *Dictamnus Fraxinella* is another plant which has hitherto completely baffled me, and yet one sees it flourishing in cottage gardens without any care. I cannot tell how often I have tried it, but I see now one or two plants are beginning to show signs of growth, so that I hope yet to succeed with it. When once it has made a start one may hope that it will do well if let alone.

I have not enumerated many plants about which I might say much, but what I have written of will show how in a small garden one may grow a great variety of things of the most varying character; and plants, too, the blooms of which may be freely cut for bouquets or house decoration, and some of which, no matter of what the character the season may be, are sure to flourish. The taste for these is rapidly spreading, and if what I have written may serve as a word of encouragement to those who wish to get away from the bondage of bedding-out, I shall not have written in vain.—D., Deal.

HALESIA TETRAPTERA (THE SNOWDROP TREE).

ON the lawn here there is a fine specimen of the above, which now it is in blossom is a beautiful sight. In the spring of 1881, during a heavy snowstorm, the main branch was broken out of the centre; before that the tree was about 25 feet high, with a spread of about the same number of feet in diameter. Though this species has been introduced into this country a long time, it is by no means so well known as it should be; for not only is the tree hardy and very showy when in blossom, but the seed pods also look well hanging in bunches along the branches. Some people say the seed pods are very agreeable to the taste, but I have not tried them. From the branch which the snow broke off I turned some feet for a set of drawers; the wood, which I found to be hard and close-veined, took a fine polish. This tree is a native of South Carolina. On the banks of the Santa river it is said to grow about 20 feet high before it branches. It is propagated from seed. The bark of the tree is very pretty, being of a darkish colour with many irregular shallow fissures; it makes beautiful rustic work.—B. P.

POLYGONATUM MULTIFLORUM FL.-PL.

THE double-flowered Solomon's Seal is perhaps not as well-known as it should be—hence a passing notice and accompanying sprays. There are few hardy plants that bloom at this season of the year that are more useful for cutting from for room or table decoration, or without some preparation so readily admit of being easily arranged with large flowers. Besides, to many they would recommend themselves on account of their fragrance, which more particularly in the early morn and evening is somewhat suggestive of the perfume of Tonquin bean or new-mown hay.—S. P. E. S.

THE GRANGE, WALLINGTON.

No more suitable time than the present could be chosen to visit Mr. A. H. Smee's very interesting garden at Wallington, and those who have only seen it in the autumn or winter when its charms have faded would scarcely recognise it in its summer garb. It is a pleasure to see something of an uncommon character in the design of a garden which all can fully appreciate who are familiar with the formality that is too prevalent in suburban establishments, and none can visit The Grange without enjoying the diversity and beauty of its winding shady walks, the numerous sparkling rivulets, and the luxuriance of the vegetation. In several nooks, particularly that termed the Fern Glade, an artist might find many agreeable studies, and such a pretty combination of foliage and flowers is well worthy of being fixed upon canvas. Overhead are lofty Horse Chestnuts laden with their white spires, the red and white Thorns fill the air with their perfume, fine bushes of *Rhododendrons* bear massive heads of brilliant flowers, while in the foreground the eye turns with relief to the soft green of the abundant Ferns, amongst which the majestic *Struthiopteris germanica* is very prominent, unfolding its magnificent fronds, some of which are already 5 or 6 feet high. Fringing the streamlet is a dense margin of the graceful *Carex pendula*, the thousand drooping heads of which give a peculiarly characteristic appearance to this portion of the garden. In such sheltered, moist, and cool situations as these Mr. Smee grows his Orchids out of doors during the summer, and preparations are now being made for placing about a thousand out in the same way this season. It is not surprising that the Orchids succeed so well out of doors where such suitable positions can be provided for them; but very few gardens are so well adapted for the purpose as this. For some of the heat-loving Orchids a more open situation is selected, and there the growths get exactly what they require—namely, a thorough ripening.

In the houses a good display of Orchids in flower is now provided, and Mr. Smee could not have chosen a more favourable time to throw his garden open to the public, as was done last Saturday, Sunday, and Monday. That the privilege was appreciated was shown by the number of visitors, over a thousand of whom inspected the garden and houses on Sunday afternoon. The Fern house, where the majority of the Orchids are arranged, has a beautiful appearance, the association of the brightly tinted and varied Orchid flowers with the delicate graceful refreshing

green foliage of the Ferns, most informally and tastefully disposed, being the true style of arrangement that should always be adopted with such plants. *Cattleya Mossiæ* is especially well represented, a number of fine varieties being notable, one named *Smeeana* forming a distinct type, with a preponderance of a golden-orange hue in the broad lip. The beautiful *Lælia purpurata* is in excellent condition. The very late and long-lasting *Calanthe Regnieri* has still several flowers fresh, although the first opened on February 27th—over three months ago. The yellow *Oncidium Marshallianum* and *O. concolor* impart a welcome brightness, while numerous others, as the following list testifies, add to the attractions of the collection.

ORCHIDS IN FLOWER AT THE GRANGE.

<i>Aerides odoratum</i>	<i>Leptotes bicolor</i>
<i>Bolbophyllum Lobbi</i>	<i>Masdevallia Benedictæ</i>
<i>Calanthe Regnieri</i> , opened February 27th	Chimæra
<i>Cattleya amethystina</i>	coenulescens
<i>citrina</i>	conchiflora
<i>imperialis</i>	coriacea
<i>labiata</i> Roezli	Harryana
Mendeli	Houtteana
Mossiæ, 120 flowers open	<i>Maxillaria Harrisonæ</i>
Mossiæ Smeeana	<i>Odontoglossum Alexandræ</i>
Skinneri	cordatum
<i>Chysis bractescens</i>	cirrhosum
<i>Cirrhaa viridis purpurea</i>	citrosimum
<i>Cœlogyne ocellata</i>	nebulosum
<i>Cymbidium aloifolium</i> , fifty flowers	<i>Pescatorei</i>
<i>Cypripedium Argus</i>	tripudians
<i>barbatum</i>	vexillarium
caudatum	<i>Oncidium concolor</i>
Lawrenclanum	cornigerum
<i>Dendrobium albosanguineum</i>	cucullatum
<i>Dalhousianum</i>	Marshallianum
eburneum	mesochlorum
Falconeri	rotundifolium
japonicum	tricuspidatum
thyrsiflorum	<i>Pescatorea Lehmanni</i>
<i>Epidendrum evectum</i>	<i>Phalænopsis Boxalli</i> , eighteen flowers
<i>vitellinum majus</i>	Schilleriana
<i>Galeandra nivea</i> , eight spikes	<i>Saccolabium curvifolium</i>
<i>Lælia cinnabarina</i>	guttatum
<i>elegans</i> , two spikes of nine flowers	<i>Vanda Batemanni</i> , twenty flowers
<i>purpurata</i> , twelve flowers	teres

Under the care of Mr. Cummins much improvement has been effected in the plants, both Orchids and Ferns, and the collection has been very greatly extended. At the present time about 680 species and varieties are grown, the collection thus holding a prominent position amongst those possessed by amateurs. Many cultural and other experiments are constantly being made, and some interesting crosses have been made between species of *Odontoglossums*, which have resulted in fine fruits that look very promising. For instance, a plant of *O. radiatum* has been crossed with the largest-flowered *O. Alexandræ* in the collection, and is now bearing a large fruit; *O. Rossi*, similarly fertilised with pollinia from *O. Alexandræ*, also has a well-developed fruit; *O. Halli* and *O. gloriosum*, both fertilised with their own pollinia, have large fruits. *Lælia albida* has been crossed with *L. anceps* successfully as far as can be seen at present, but all trials to obtain a cross the reverse way have failed. *Lycaste Deppei* self-fertilised, and *Phalænopsis amabilis* crossed with *P. rosea*, also have good pods.

A short time since in this Journal, Mr. Cummins alluded to the advantages he considered were afforded to *Phalænopses* by suspending the plants over growing plants, such as Ferns, *Pileas*, and *Fittonias*; and there is no doubt that the constant moisture thus arising amongst the roots of the *Phalænopses* is very beneficial. Already an improvement is perceptible in the plants so treated, and there is every reason to expect a continuation of this progress. Another cultural item is worthy of remark in reference to staging for Orchids. In one of the houses sheets of corrugated iron are employed for this purpose, and when covered with ashes, small coal, shingle, or similar material, these are well suited for the purpose, as they retain the moisture well. In Mr. Laing's Forest Hill nursery a similar plan has been successfully adopted.—L. C.

PARANEPHELIUS UNIFLORUS.

For this interesting plant our gardens are indebted to Mr. Wilson Saunders, to whom seeds of it were sent, over fifteen years ago, by Mr. Farris, from the mountains of Peru. The plant belongs to the natural order *Compositæ*, sub-order *Tubulifloræ*.

There is but one species of this genus, that which is shown in fig. 114. It is a dwarf herbaceous perennial, growing close to the ground, and forming with its leaves a rosette on the surface, in the manner of *Cnicus acaulis* of our pastures and meadows, or the *Carlina acaulis* of our herbaceous collections.

The leaves are of a dark green colour on the upper surface; the under surface white with pale green veins, contrasting well with the fine, large, golden yellow composite flowers about 3 inches across, giving a lively appearance in midwinter when other flowers are scarce.

The seeds are sown early in spring thinly in a well-drained pot, and placed in a cool pit near the glass and moderately watered. As soon as the plants are large enough they are potted singly in small pots, placed again in a pit, and allowed plenty of air. When the plants become established, as soon as the pots are well filled with roots, they are to

be repotted into larger pots in a mixture of good turfy loam and peat, adding a small portion of well-decayed manure, after which they are placed in the open garden fully exposed to sun and air during the summer months. In autumn they are to be removed to a cool airy greenhouse near the glass, where the flowers soon begin to expand, and last a considerable length of time in perfection.

NOTES ON GRAPE CULTURE.

THE present is a busy time with the Grape culture, as Vines require almost daily attention in addition to the ordinary routine of watering and

Vine in every possible way do not supply cold water. Nothing is more likely to check the young roots than a deluge of cold water. Root and branch will revolt against this. Hot water should be added to the cold until the temperature reaches 75° or 80°, and water all through with it at this temperature. Outside borders which are often cold in spring are especially benefited by the lukewarm water. Where the Vines are weak and require a stimulant which will assist them throughout the whole season dissolve one handful of Thomson's Vine manure in each four gallons of water, and let this find its way to the roots.

Surface Dressings.—In the case of new borders or those thoroughly made only a few years ago any kind of surface dressing will as yet be unnecessary, but where the borders and Vines are old and there are many roots with little food for them a surface dressing is of the utmost advan-



Fig. 114.—PARANEPHELIUS UNIFLORUS.

ventilating. The most important time of all is from when the shoots are a few inches in length until the bunches are formed and the berries thinned, and if their numerous requirements are properly attended to during the time specified success is almost sure to attend the Vines and the crop.

Watering the Borders.—In properly drained borders few plants require more water at the roots than Vines, and I think they more often suffer through not getting enough than from having too much. When the borders are allowed to become dust dry in winter much water may be supplied to them in spring before the whole of the soil is wet, and there is reason to fear that in many instances the progress of the Vines in the early stages of their growth is much impeded through not having sufficient water at the roots.

The surface of the border may look very moist and yet be dry beneath, but the whole should be thoroughly saturated before the leaves are visible, and the whole of the border be kept quite moist throughout all the early stages of the Vine's development. Mere surface waterings are to be avoided above everything, and as the only object in watering is to assist the

tage. The best time to put it on is just when the buds show signs of breaking. Cow or horse manure, or a mixture of both, should form the chief part of that used. We generally surface-dress in this way. A good sprinkling of Thomson's Vine manure is spread over the surface of the soil. The manure is placed over this to the depth of 4 inches, and then the whole is supplied with tepid water. Both outside and inside borders are treated in this way, and satisfactory results follow in a very short time.

Temperatures.—No hard-and-fast rules for temperature can be given at this season. When it is a bright sunny day the temperature in both late and early houses may rise to 80°, 90°, or even more than this, and when the weather is dull and cold it may never rise above 65° or 70°. Early in the season when the houses have to be kept close a high temperature at the time growth is beginning will often cause the shoots to become spindly; but there is no danger of a high temperature doing this at present, as abundance of air can be admitted during the day, and this will keep them all right. From 65° to 70° is a suitable night temperature for all varieties, and it may be allowed to fall to the first named in the morning.

Ventilating.—A matter of much importance, but easily attended to.

It is a great mistake to allow the temperature to rise to 85° or more in the morning before admitting air, and then suddenly open the ventilators widely at the top or bottom, so that the temperature falls quickly. The ventilators should always be opened a little by the time the temperature begins rising by sun heat, and this should be increased as it gets warmer, and on no account should air be admitted to lower the temperature. If 85° or 90° is the day temperature admit sufficient to prevent it going above these figures, and always study which way the wind is blowing before the ventilators are opened. When the wind is either very strong or cold do not open the front ventilators, but work the top ones only. In closing them in the afternoons of fine days it is an advantage to allow the temperature to rise higher than it was before, but this can be overdone. To close the house at 2 P.M. and raise the temperature to 100° or 105° might scald the leaves, and it would certainly scald the berries as well as making the leaves very flaccid; but should closing be deferred until 3 P.M. or later, and the temperature only reach 90°, no harm but good will be the result. On days when cloud and sunshine are alternate much running about must be done to regulate the ventilation according to the outside temperatures. I approve of reducing the ventilation by degrees in the after part of the day. It is an excellent plan to allow some of the back ventilators to remain open a little throughout the night, but this practice should not begin until May, and applies more especially to Vines advanced in fruiting.

Disbudding.—When pruning in winter two or more eyes or buds will be allowed to remain on each spur, and as only one of these will be required to form a branch one or more must be taken off if all grow. These are allowed to grow too long sometimes with the view of seeing which one is likely to bear the finest bunch, but where anything of this kind is under consideration do not fail to break off the shoot which is not required as soon as this can be seen, and the very weak ones may be taken at a very early stage of their development. Young rods producing shoots for the first time generally break into growth at every bud, and as these are always much closer together than the shoots ought to be permanently they must be disbudded very freely. From 1 foot to 15 inches is a suitable distance for the side shoots to be apart, and they should be disbudded to this scale.

Stopping the Shoots.—At this season the shoots grow very fast, and those only a few inches in length to-day may be a foot or more in a week, and stopping should always take place before much superfluous growth has been formed. It is always a safe plan to stop all the side shoots at one joint or leaf beyond the bunch, and this should be done almost as soon as it is seen where the bunch is situated. When stopping requires to be done the Vines may be looked over almost daily, and each shoot as it gains the size indicated should have the point pinched off. Healthy Vines will soon push out a new leader, and this must again be stopped at one leaf beyond the first, and may go on for two or three times, when growth should be restricted to this point.

Tying-in the Young Wood.—Much care must be exercised in doing this, as when the shoots are growing straight up or in an opposite direction to the way they will be ultimately tied there is great danger of breaking them. Tying, as a rule, must not begin until after stopping has been performed, and unless the shoots come naturally into position do not try to bring them down all at once, but bend them a little, give them a long tie, and in a few days draw them down a little further, and in about ten days or so and at the third tying they may be secured in their position for the season. Never use twine for the young wood. It cuts through the shoots and injures them. Soft matting or, best of all, raffia grass, should be used. As heavy bunches may have to depend on this for their support use strong pieces which will not give way before the bunches are cut. Never tie two shoots close to each other, and allow the next two to be very far apart, but all should be tied-in, straight out, upwards or downwards, to avoid crowding and to fill the space evenly.

Syringing.—This is not now practised so much as it was at one time. Years ago the majority of Vines were syringed up to the time the fruit began colouring, and sometimes after that, but of late syringing has mainly been confined to the period between the Vines starting into growth and the opening of the blooms. When syringed during this time it has a tendency to make them start into growth more freely, but syringing must only be done on fine bright days, and not at all when the Vines are flowering. Always use water the same temperature as the house for the purpose, and where there are insects of any kind on the Vines we advise their being frequently syringed from the time the fruit is formed until it begins colouring. When syringed in this way the fruit may not have such a fine bloom as it might have if not syringed, but it is much better to have Vines and Grapes free from insects than finely bloomed but repulsive fruits. Where syringing is done frequently the interior of the house will always be moist, and this is right, as a humid atmosphere must always be maintained in houses in which Grapes are swelling, and if syringing does not supply this the surface of the floor or pathways should be damped twice or three times daily.

When in Bloom.—As I have said above, at this time syringing must be discontinued, and a very dry atmosphere should be maintained during that period. At mid-day, or indeed a number of times every day, the rods can be sharply shaken to agitate the bunches and cause the pollen to be distributed. This is especially an advantage in the case of Muscat varieties, and every kind is benefited by it. When a proper "set" is not secured some of the berries swell to their full size, but others remain quite small and stoneless, and this disfigures the bunches as well as being unprofitable.

Superfluous Bunches.—On all vigorous and healthy Vines there are always many of these, as some kinds, such as Gros Colman, will produce

two and three bunches on every shoot, and every shoot on all kinds will produce one bunch at least, which is too much for the permanent crop. It is not always wise to cut off these superfluous bunches before the berries are formed, as in the case of this not being accomplished thoroughly probably some of what might be regarded as the second-rate bunches would have formed the finest berries. They can, however, be taken off as soon as the berries are formed, and it can be distinguished which are the best. The best formed and finest bunches must always remain to form the crop, and they should be allowed to hang as evenly all over the house as possible. It is unwise to allow more than one bunch to each shoot, and if there are two good bunches on one shoot and one slightly inferior on another, we would be inclined to take one of the two off and allow the last-mentioned one to remain.

Weight of Crop.—This is a matter on which it is very difficult to advise accurately, and it is also one in which mistakes are most liable to occur. It is very seldom the crop is reduced too much, but there are many cases in which too great a weight is allowed to remain. There may be two housefuls of Vines, both the same size, but in one strong Vines, and in the other weak ones, and it would never do to allow the latter to carry as much fruit as the former. The strength of the Vines ought to be studied, and try and remember how the crop answered last year. If the Vines would have perfected more bunches allow more to remain this time, but if the crop did not finish well owing to its being too heavy do not allow the same mistake to occur this year.

Thinning the Berries.—Never do this until the superfluous bunches have been removed, but proceed with it before the berries become a firm mass, as they generally do by the time they are about the size of peas. Do not handle the berries, use a little piece of forked stick in the form of the letter Y to touch the bunches, and hold up the shoulders to reach the centre. Clip all the smallest of the berries out first, and do not reduce the size of the bunch by taking away the extreme berries. Beginners at the operation should never be trusted to do exhibition bunches. When too many berries are allowed to remain the bunches become firm masses before being fully developed, and then many of the berries split. I would prefer having them too thin than too thick, but a little experience and forethought will soon enable anyone to thin quickly and properly. Only sharp scissors should be used in thinning, and every berry must be cut clean out, but the point of the scissors must not be run into any of those remaining, and the stems should not be bruised or injured in any way.

After Requirements.—These are very few, as when the bunches have all been thinned, the shoots tied into their places and stopped, the heavy part of the work has been accomplished, and those who may only have one vinery and get a practical man in to do the operations just noted may very well dispense with his services at this stage and attend to further requirements themselves. Shoots which continue growing must be as persistently stopped; saturating the roots and attending to the ventilating will insure the maturing of the crop.

Plants in Vineries.—Gardens where vineries can be given wholly to the Vines are the exception, and I have no doubt the majority of your readers are anxious to make all they can of their vineries, especially in spring, when so many require forwarding in genial atmospheres. We find vineries excellent places for raising many seedling plants in spring, and the friendly shade the foliage affords is greatly in favour of the fine development of tender Ferns and fine-foliaged plants. These do no harm whatever to the Grapes or Vines throughout the spring and summer, but when the fruit is ripe and it is desired to keep the atmosphere dry, particularly in late autumn and winter, plants and everything requiring moisture must be cleared out. One great objection to plants in vineries is their liability to introduce insects to the Vines, and if this is avoided there is no objection whatever to anything else connected with the matter.—J. M.

PONTERIAS AT OXFORD.

AMONG free-flowering exotic aquatics Pontederia (Eichornia) azurea deserves to be mentioned as a most desirable plant for those to possess who have accommodation for it. As seen in the Lily house in the Oxford Botanic Garden, its beauty impresses one beyond what can be stated in the form of a paragraph, and that notwithstanding the presence of a collection of the most lovely species of Water Lilies that can be met with in this country. The spacious tank in which it grows would in the summer months be too small to admit, to the fullest extent, of its luxurious growth, which is here judiciously regulated. The six-petalled flowers are of a rich mauve colour, the upper one being exquisitely shaded at the base with deep violet, above which is displayed an inverted compressed heart-shaped marking of deep gamboge, and the flowers are freely produced on spikes, many of them being 9 inches long; these rise sufficiently high to exhibit as lovely an example of delicate colouring as would delight the most fastidious lover of flowers.

There is yet another species of this plant that the Curator of this garden (Mr. W. H. Baxter) may well feel proud of having this season succeeded in flowering, we believe for the first time since it was introduced into the collection very many years ago. And now it is not a solitary plant that has been signalled out for special treatment with a view to achieve what has fortuitously happened. There are, at least, four plants that have produced beautiful spikes of flowers, and these, with a number of others,

are growing in a space measuring about 16 square feet, where the water is only 12 inches deep, with a deposit of a few inches of loam, in which the roots have thoroughly established themselves. This is *Pontederia erassipes*, imported to this country from Guiana about the year 1825, and generally described in botanical works as bearing blue flowers. However, this is not the case in respect to those which have occasioned this communication. The individual flowers are larger than those of *P. azurea*, and being as freely produced on the spikes present a charmingly delicate appearance. The upper petal, which is a full shade deeper in colour than the others, which are of a warm flesh colour suffused with a pale purple tinge, exhibits a conspicuous diamond-formed marking of a rich deep yellow surrounded by an uncommonly pretty delicate tint of glistening pale blue shaded with purple, and the flowers being of a diaphanous texture are as unique in appearance as they are unknown to cultivators.—S. P. E. S.

FLOWER SHOW MANAGEMENT.

I WISH to make a few remarks on the Edinburgh schedule. I was much delighted with their spring show, and being an amateur I was anxious to see their exhibits, but to my astonishment found there was only one prize offered to amateurs—viz., for six Hyacinths. I procured their prize schedule, and on examination find that at their Rose Show and September Show there is not a single prize offered for competition confined to amateurs. Really this was most surprising, seeing the numerous prizes offered to gardeners and nurserymen. Surely the executive is not wise in thus ignoring the numerous and enthusiastic amateurs of Scotland, who are the backbone of every society with which I am acquainted. I was also very much surprised to see the little encouragement they offer for hardy cut flowers. Not a single prize for herbaceous plants, either at the July or September Shows. What is the meaning of this? I inquired of a friend; but he could not tell, unless that before they had their present large place for their exhibitions the space was limited; but no such excuse could now be made, as the Waverley Market is quite large enough for many more exhibits.—A. A.

PROPAGATING CARNATIONS FROM CUTTINGS WITHOUT HEAT.

FOR many years I have been a correspondent of the *Journal of Horticulture*, and never feel happier than when trying to describe some gardening practice that the humblest can adopt, as contrasted with hotbeds, stoves, bellglasses, cloches, high temperature and elaborate contrivances, that many—the vast majority who dearly love their gardens, especially in the vicinity of large towns—cannot conveniently have. I commenced some years ago with the manure bed system, but did not like the result, and have since adopted this simple plan. My beds and borders are all occupied about the time cuttings are fit to take, so I get some long boxes. A 6-foot one will hold one hundred cuttings readily, as we only have them there until well rooted. Tree Carnations and the perpetual flowers will give cuttings fit to insert from January to the present time, and a cold airy frame will suit them for callusing. In a moist close frame they will damp off—it is better to chance them outdoors—but I am not so much referring to those winter-flowering "aristocrats" of the family as the summer-bloomers that any artisan can amuse his leisure evenings with. Indeed, except last season's side shoots, it is almost impossible in many varieties to get cuttings sufficiently ripened to strike readily. *A. Alegatière* and *Malmaison* are two of the most vigorous, but where a yellow ground is preferred none should be without *Mrs. George Hawtrey*. Well-ripened side shoots—especially such as have not flowered—are most desirable. When it is intended to root cuttings in the open air and leave them out all the winter, it is better to wait until you can get cuttings of this description, which will be during July, August, and September. I never take 1½ or 2-inch long soft cuttings; if they are hard and woody so much the better. Take the cuttings with a sharp knife. To prevent rotting at the base leave them aside in a cool moist place, say for twenty-four hours, and then dibble in, taking the precaution of putting a pinch of silver or river sand before the cutting into the hole, press very firm, water, and put in the shade for some time. Some will root before the autumn is over and may be transplanted at pleasure, but many, especially yellow grounds, will not do so until the following spring. I have several beds and borders of them thus rooted since last August, and now all preparing to flower without heat and without trouble in the open air.—W. J. MURPHY, *Clonmel*.

CARPET BEDDING.

BEDS devoted to this method of arranging plants in the London parks are now being furnished, and will very shortly be admired by thousands of visitors, for carpet beds, well filled, are attractive at once, and continue so for several weeks after *Pelargoniums*, *Calceolarias*, and flowers of that nature employed in masses are faded.

In planting a carpet bed it is of the first importance to have the soil equally firm and the surface very level. There must be no after sinking or the effect will be spoiled. The design is then marked on the surface,

the lines being indicated by white sand, and the plants inserted in the spaces with great exactitude. In giving another of Mr. Graham's Hampton Court designs, it is not suggested that it be strictly followed regardless of circumstances, but can be modified to suit any particular bed. This design would have a pleasing effect planted as follows:—

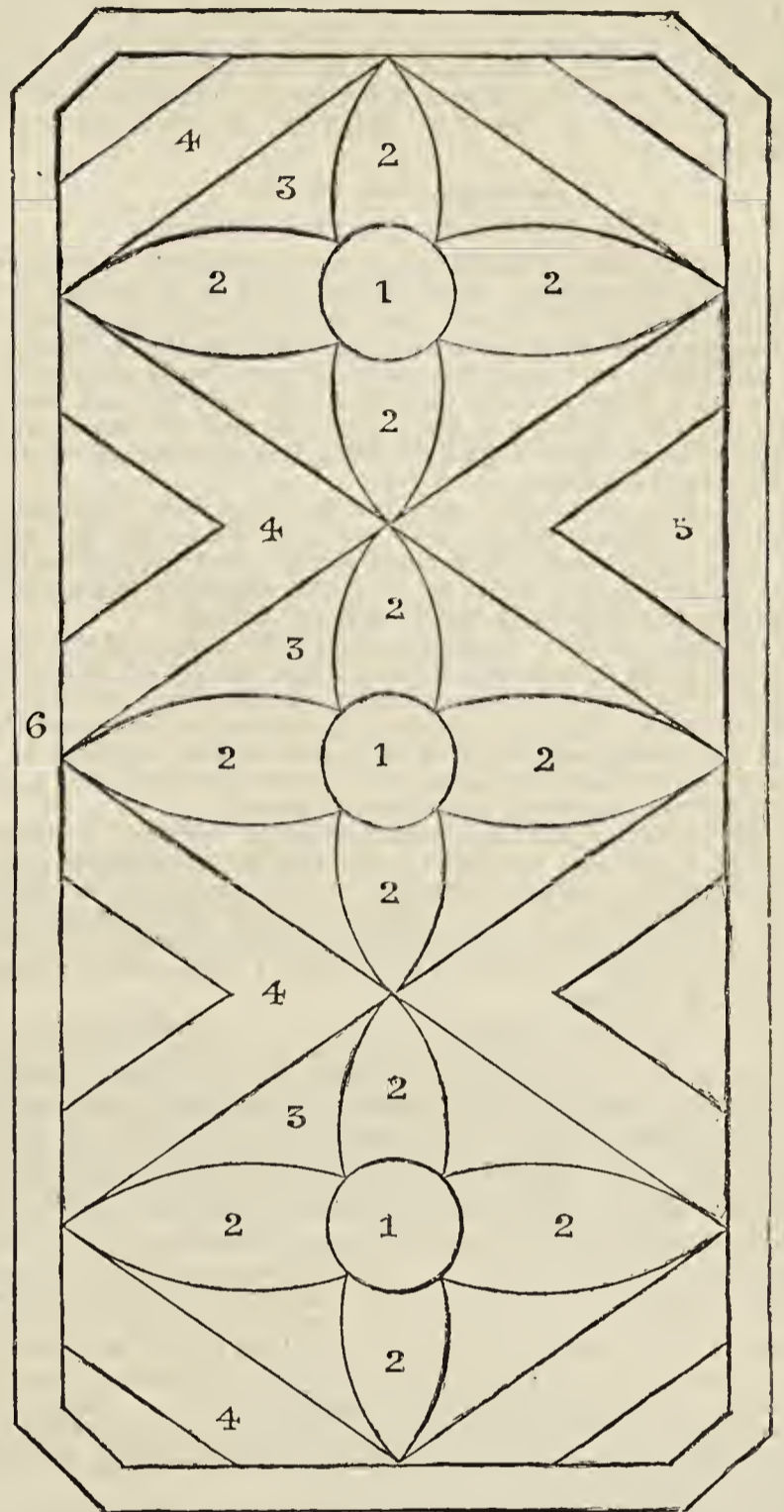


Fig. 115.

1, *Leucophyton Brownii*. 2, *Alternanthera* of any kind. 3, *Mesembryanthemum cordifolium variegatum*. 4, *Herniaria glabra*. 5, *Alternanthera* or *Mesembryanthemum*. 6, Bed to be raised about 5 or 6 inches above the surrounding ground, bevelled, and planted with *Recheveria secunda glaucum* and a little *Sedum glaucum* to keep up the soil and form a border.

It is by no means essential that the above arrangement be adhered to, as the design would look equally well planted in many different ways in accordance with individual taste and the plants at disposal.

PLANTS IN FLOWER AT KEW.

THOSE who think that *Clanthus puniceus* does not make a good pot plant would be easily convinced by a visit to the temperate house at Kew at the present time, where a dozen plants in small pots speak for themselves. They are covered with large and curious bright scarlet flowers. Placed at intervals along a stage, the effect leaving nothing to be desired. Against a house in the open air also we noticed a large plant finely flowered. The *Rhododendrons* seem to surpass those of all previous years, *R. Edgworthi* especially, with its fragrant flowers diffused through almost the entire house. *R. Nuttalli* is carrying eight or nine large trusses. This plant is full of interest from the fact of its having two stems rising from the ground, both of which carry a large head of foliage and flower alternately, never both the same year. *R. Aucklandi* is also very sweet; the flowers are large and pure ivory white. *R. calophyllum* is also pretty, though small, and the flowers are very fragrant. The *Primula japonicas* dotted about are very effective, one extra strong plant having six or seven whorls, one of the whorls carrying twenty-

six flowers. *Mitraria coccinea* is a handsome pot plant; the intense scarlet urn-shaped flowers distinguish it from all the others. It does well on a warm wall in the open air, and on a south wall even in the northern regions, and would be a valuable addition to the list.

Callistemon rigidum, with about a hundred bushes, is unmistakably a grand sight. The colour seems to be bursting from every part of the plant. *Vaccinium rugosum*, a very curious plant, with small funnel-shaped waxy flowers netted with dark brown, and produced from the old bare branches, is very interesting, as is also *V. serratum*, a small yellow-flowered one. *Corokia Cotoneaster*, a plant with *Cotoneaster*-like leaves and shining yellow star-like flowers, is very pretty. *Andromeda formosa*, with its large clusters of Lily of the Valley-like flowers, is very fragrant and graceful.—M.

THE TREES IN EPPING FOREST.

IN these 5928 acres of ancient waste and woodland we have trees of comparatively few varieties. Noble Willows grow on its western boundary, rising from a stiff clay soil, and attaining handsome proportions. In the northern and more picturesque parts between Queen Elizabeth's Lodge and Epping are Oak, Hornbeam, Blackthorn, Beech, and Hawthorn, with, in much fewer numbers, Crab, Elm, Ash, an occasional Maple, a steadily increasing number of Birch trees, and some few others, with a luxuriant undergrowth of Hollies, Brambles, Ferns, and struggling, straggling shoots and seedlings.

The vigorous policy of clearing out the close Forest undergrowth adopted by the authorities, especially noticeable last autumn and winter in the thousands of bundles of cut bough and bramble lying over the forest stacked for carting, is probably regarded with something like horror by the butterfly, insect, and wild-flower hunters of Epping.

Mr. Buxton, one of the verderers, with a lifelong acquaintance of the Forest, anticipates objections to the thinning of the pollard trees—some thousands of which have been cut down—in his recent valuable and sympathetic book. He does not refer to the wholesale clearing and trimming of the undergrowth, which in the course of time, objectors to the system are never tired of declaring, will convert the Forest into a park. There is, however, something explanatory to be said.

So much good has gone hand in hand with this "clearing" in the way of opening up the once bog-like bottoms by ditch and draining, and of making the pedestrian's paths straight by the cool cleared green "Rides," that the average visitor would be churlish indeed who demurred at the general "excellent way" of the Forest authorities. But one may hope that for every pollard cut down in the thickets a sapling will be planted in the open Forest tracts.

OAKS.—The Oaks are of the species which the botanist calls *Quercus sessiliflora*. Its fruit is produced close to the stalk, and the leaves are smaller than most other varieties. Generations of amateur woodcutters have pollarded them out of all semblance to the grandeur and majesty with which ancient Oaks are usually associated; but some fine ones have been preserved. Of these the largest stands by Fairmead Lodge, with a bole 22 feet in circumference. Another fine tree is that known as Bedford's Oak. In April its amber-and-golden buds stud the branches with jewel-like beauty, and with leisurely slowness blossom just as the young leaflets are beginning to expand. In October its acorns appear in richly embossed cups, to be carried away, and planted where some will have a chance to grow, by strong winds and active squirrels. On some of the old Oaks tufts of Fern prettily spangled with gold will be seen growing. It is said that the ordinary duration of the Oak is 900 years, and many in the Forest are at least as old. Insects abound in the Oak. "Those lovely creatures, the butterflies of various kinds, beetles, and a multitude of little creeping things," of which only the botanist knows how many, flock to it, abide in, or lodge upon it.

BEECH.—The finest specimen of this stately tree must be sought on the highest ground where the soil is lightest and driest. There are some noble groves near High Beach, in the Monk Woods, and in the Green Ride of Epping Thicks. Under the Beech boughs the walks are dry, and in summer time pleasantly cool. Its branches, sweeping upward to great heights, form stately arches, and the smooth grey bark and divisions of its bole often make it look very like a cluster of stone pillars such as we see in Gothic architecture. In autumn its foliage assumes the rich hues of amber, gold, and copper, and is strikingly beautiful, especially at sunset; and then, too, begins the formation of those spike-like buds which the spring merely develops into more visible forms, and so death and vitality go hand in hand. The Beech is not in favour with the insects, nor will the grass spring up in its shade; but mosses and fungi love to overspread its roots and climb its mighty boles. One of the most beautiful aspects of the tree is seen when the sun shines through its leaves just after a shower.

HORNBEAMS, which are sufficiently like Beeches to be mistaken for them, abound in Epping. No matter what the soil, wet or dry, light or heavy, these hardy members of the sylvan fraternity flourish under the most unpromising circumstances, and defy the roughest ill-treatment to weaken their vigour or check their obstinately persevering growth. The deer are particularly fond of their early springing leaves, and this may account for such an abundance of these trees in a royal forest wherein all things once played a subordinate and ministering part to the lordly beasts. The branches of Hornbeams have a singular tendency to rejoin and blend with the parent stem, and this will be often noticed in the course of one's Forest rambles.

BIRCH.—The graceful sway and delicate curves of the Lady Birch (*Betula alba*) afford striking contrasts of form and character, and the

rich abundance of its winged and wind-borne seeds give promise that in the future this pretty tree, with its silvery moss-ringed stem, will, wherever the soil is dry enough and open for their reception, make many a pleasant grove, with flickering sun and shade. It is here a comparatively new-comer, but has propagated of late years with singular rapidity.

The HAWTHORN, which delights the eye in the "merry month of May," with its rich luxuriance of white blossoms, has many an ancient and rugged-looking specimen in all parts of the Forest. BLACKTHORNS, which blossom earlier, are also plentiful, and make the dense thickets impenetrable with their picturesque stems.

The ALDER and the WILD CHERRY are also amongst the Forest's denizens.

In the future we shall doubtless have trees in much richer and more varied abundance; for great spaces of stolen land newly recovered (thanks and many thanks to the Corporation of the City) are to be planted with all possible speed. These young woods will, of course, give fresh variety to the scenery; but it is worth the consideration of those who have the planting and management whether they would not do well to introduce trees of foreign origin which are known to take root and flourish in such soil as the Forest possesses. As to the merely sentimental and fanciful objection urged against them because they are not now English—as many grand old trees now common in England once were not—is it worth the serious attention of either artistic or practical men? Imagine what a charm there would be in contrasting Oak and Beech with the neighbouring and more richly ornamental forms and colours of a wild American forest, with their rich undergrowth of flowers and blossoming plants. Mr. Alfred Wallace once pointed out that, "Nearly all these American trees (such as Sugar-Maple, Hickory, Tulip, Red-wood, and the Locust) could be raised from seed almost as cheaply as the very commonest kinds;" adding, as to the time of growth in such trees, "The *Wellingtonia* will reach 20 feet in ten years; the Douglas Fir grows even more rapidly when young;" and pointing out how, at Dropmore, "the beautiful grass-green *Pinus insignis* reached the height of 68 feet in thirty-four years. The Coniferous trees of Western America might elsewhere be "planted in masses, groups, or belts, and with winding paths, broad glades, and occasional shrub-planted openings admitting free access to every part of it, would probably be even more attractive than a forest of Eastern America," which also, according to Mr. Wallace, should have its place in the new portions of Epping woodland. Eastern Europe and Western Asia also contain a large variety of trees, which might be naturalised here in Epping, and there is no reason why we should not have a Japanese forest side by side with the ancient woods of Essex. As an artist and a lover of forest rambles at home and abroad, the writer heartily commends the idea to those who are set in authority over London's Romance, the wilds of ancient Epping.—(*Lindley's "Walks in Epping Forest."*)

ALPINE AURICULAS—TRENCHING.

I WAS very pleased to see the remarks of Mr. A. Pettigrew respecting the Auricula seed that was sold for the benefit of the late "Single-handed's" family. I had a packet of the same, and they have turned out very well indeed; and I can fully endorse all that Mr. Pettigrew has said about them.

There has been much discussion lately about trenching, which I think has been very useful. I have had to suffer from injudicious trenching, the garden in my charge having a very bad subsoil, and when the grounds were laid out before I came here the subsoil had been brought to the top. I am personally convinced that frequent trenching is not necessary. I remember a large Strawberry bed being the same as Mr. Gilbert mentioned. The Strawberries were hoed off, and the iron bar used for making holes. These were then filled with water, Brussels Sprouts planted, and I never saw a finer crop before or since.—A. J. BROWN.

ROYAL NATIONAL TULIP SOCIETY.

MAY 30TH.

EXIT Orchids!—enter Tulips! Yesterday, Friday the 29th, the large show house in the Botanical Gardens, Old Trafford, Manchester, was full of brilliant Orchids, showy stove and greenhouse plants, stately Palms and spreading Tree Ferns; to-day, the most gorgeous of our hardy flowers takes the place of the exotics, and so continues one day longer Mr. Findlay's great flower carnival, which proved highly successful from a financial point of view. It has been a long week of varied and lovely flowers. To-day the change is striking in the extreme. The huge show house, though to some extent furnished by the reintroduction of the plants Mr. Findlay had to remove to make room for those brought from a distance for competitive purposes, appears singularly empty. In the place of Orchids appear lines of tables, on which are placed flaunting Tulips, correct in the eye of the florist, and enshrining the most fascinating beauty in the eyes of not a few. There are men here who would turn away from *Vanda teres* and *Cattleya Mendelli* and say they are far inferior in their opinion to a perfect Sir J. Paxton or a correct Mrs. Cooper, for their hearts are in their Tulips, and they look upon them as worthy their highest admiration.

It is said the Tulip was first introduced into England in the reign of Queen Elizabeth. Previous to this the Tulip was sent, in the year 1554, by Auger Gisten Rusbee from Constantinople to Vienna, with the remark that the Turks charged a high price for them. Conrad Gesner says that he saw the plant in the year 1559, in the garden of John Henry Hawart, of Augsburg. Later on came, towards the middle of the seventeenth century, the Tulip mania, which was carried to a very great excess in Holland and in France; but it never reached England, probably owing to the then unsettled state of the country. Here it may be remarked that it is a mistaken idea that the Dutch were the raisers of the various celebrated varieties

grown by them. They were raised in the garden of the monasteries by the monks of the town of Lisle, Ghent, Valenciennes, &c., who at that period possessed the finest collection of Tulips in Europe. These were purchased by the Dutch, and sold by them as their own raising to other countries, which caused their collections to be so celebrated. During the last 100 years the English raisers completely distanced the Dutch as producers of new varieties. One of the earliest and most celebrated of English raisers was the Rev. Mr. Wood, of City Gardens, City Road, who died about the year 1805, leaving behind him a very fine collection of Tulips. It is supposed that the Tulip called Strong's King, at one time so celebrated in the south, was broken from one of his breeders. Pearson of Chilwell, Holmes of London, Maddocks of Walworth, Clarke of Hammersmith, and others, raised fine varieties—the latter especially; then came Davy of Chelsea, the raiser of Fanny Kemble, followed by Groom, Goldham, Headly, Hardy, Hepworth, and others. The varieties introduced during the last quarter of a century have come from the hands of various raisers. Some of them are to be seen in the Exhibition to-day. The flowers are divided by cultivators into four classes: Bizarres, Byblœmens, Roses, and Breeders, and the first three are further divided into feathered and flamed varieties; in the case of the former the beam of colour running up the centre of the petal is absent. Blooms of the same variety will sometimes be flamed or only feathered, but the feather must always be present in a flamed flower. The Breeders are seedlings which take on a self form for one or more years, when they break into character; but the ground colour of a breeder always determines whether it is a bizarre, byblœmen, or rose breeder. With this introduction we now proceed to give particulars of the competition in the various classes.

The blue ribbon of the Royal National Tulip Society's Show is what is termed the cup—the first prize in the class for twelve blooms, two feathered and two flamed in each class. On this occasion the Rev. F. D. Horner, Lowfields, Burton-in-Lonsdale, Yorkshire, who had a very fine lot of flowers, some of great beauty. Of Bizarres: Polyphemus (Barlow's strain) and Sir Joseph Paxton, flamed; Hardy's William Wilson and Hepworth's Seedling, feathered; Byblœmens: Talisman, and Duchess of Sutherland, flamed; Mrs. Cooper and Friar Tuck, feathered. Roses: Annie McGregor and Aglaia, flamed; and Heroine and Charmer, feathered. Of this stand William Wilson, Mrs. Cooper, Friar Tuck, Hepworth Seedling, Annie McGregor, Polyphemus, Sir J. Paxton, and Heroine were especially fine. Mr. Daniel Woolley, Millgate, Stockport, was placed second with smaller but generally correct flowers, having Bizarres: Masterpiece and Photo, feathered; Sir J. Paxton and Masterpiece, flamed. Byblœmens: Chancellor and Walker's Duchess of Sutherland, flamed; Bessie and King of the Universe. Roses: Mabel and Aglaia, flamed; Mrs. Lea and Julia Farnese, feathered. Third, Mr. T. Haynes, Warwick. Fourth, Mr. William Whittaker. Fifth, Mr. J. Thurston, Wolverhampton. The Rev. Mr. Horner was first with six flowers, one feathered and one flamed in each class, again staging finely finished blooms of Bizarres: Sir J. Paxton, fld., and Masterpiece, fea. Byb.: Talisman, fld., and Mrs. Cooper, fea. Roses: Annie McGregor, fld., and Mabel, fea. Mr. S. Barlow, Stakehill House, Castleton, Manchester, was second with small but correct flowers of Bizarres: William Lea, fea., and Dr. Dalton, fld. Byb.: Talisman, fea., and the same fld. Roses: Mabel, fea., and Hepworth's Seedling, fld. Mr. Barlow's collection is this season full of promise; he has three beds of Tulips in very fine condition, but they will not be in flower for a fortnight. Third, Mr. D. Woolley. Fourth, Mr. T. Haynes. Fifth, Mr. John Wood. Sixth, Mr. J. Thurston. Seventh, Mr. Thomas Baker. There is a class for the same number of flowers for half-guinea subscribers only, and here Mr. H. Housley, Stockport, was first with Bizarres: Sir Joseph Paxton, fld., and Royal Sovereign, fea. Byb.: Duchess of Sutherland, fld., and Seedling, fea. Roses: Mabel, fld., and Julia Farnese, fea. Second, Mr. W. Prescott, with Biz.: Sir J. Paxton, fld., and Royal Gem, fea. Byb.: Adonis, fld., and Guido, fea. Roses: Mrs. Wooller (?) fld., and Lady Sefton, fea. Third, Mr. R. Wolfenden, and fourth, Mr. A. Fearnley. In the class for three feathered Tulips, one of each, some pretty flowers are staged. The best is the Rev. F. D. Horner, who has perfect flowers of Biz., Commander; Byb., Mrs. Cooper; and Rose, Modesty. Mr. W. Dymock, Ashton, was second with Biz., Mr. Mill; Byb., King of the Universe; and Rose, Alice. Third, Mr. D. Woolley, with Biz., Magnum Bonum; Byb., Bessie; and Rose, Kate Connor. Fourth, Mr. T. Haynes, and fifth, Mr. Joseph Boydell.

Then comes a class for three flamed Tulips, and there the Rev. F. D. Horner was again first with Biz., Orion; Byb., Talisman, and Rose, Annie McGregor. Second, Mr. S. Barlow, with Biz., Dr. Hardy; Byb., May Queen; and Rose, Mabel. Third, Mr. T. Haynes, with Biz., Sir J. Paxton; Byb., Walker's Duchess of Sutherland; and Rose, Triomphe Royale. Fourth, Mr. D. Woolley. Fifth, Mr. A. Fearnley. Sixth, Mr. H. Housley. Then came a class for two Tulips, one feathered and one flamed; a class for maiden growers only; and, by way of tempting recruits to enter the Tulip ranks, Mr. S. Barlow generously presented to all who entered in this class some valuable bulbs of Tulips. On this occasion there was but one exhibitor—Mr. Thos. Boydell—who had feathered Biz., Duke of Rutland, and fld. Biz., Sir J. Paxton. There was also a class for two Tulips, one feathered and one flamed, for experienced growers, which has brought a sharp competition, and Mr. H. Housley is first with Biz. Sir J. Paxton, fld., and Biz. Royal Sovereign, fea. Second, the Rev. F. D. Horner with Rose Triomphe Royale, fld., and Byb., Mr. Cooper, fea. Third, Mr. Thos. Haynes with Biz. Ajax, fea., and Rose Aglaia, fld. Fourth, Mr. John Morris; fifth Mr. S. Barlow; sixth, Mr. W. Whittaker.

A class was devoted to the best blooms in each class of the three divisions—viz., Feathered Bizarres. The first flower in each is denominated the premier. Mr. Thos. Baker (who, singular to state, was too ill to attend the Show and died on this very day) was first with Masterpiece. Second, Mr. H. Housley with Royal Sovereign. Third, Mr. Thos. Baker with Capt. Winslow. Fourth, the Rev. F. D. Horner with Hardwicke's Seedling. Fifth, Mr. Thos. Baker with Duke of Devonshire. Sixth, the Rev. F. D. Horner with Masterpiece. Seventh, Mr. D. Woolley with Sulphur. Eighth, Mr. W. Dymock with Mr. Mills. Ninth, Mr. Woolley with Apelles. Tenth, Mr. T. Baker with Royal Sovereign. Flamed Biz.—First, the Rev. F. D. Horner with Sir J. Paxton. Second, Mr. S. Barlow with Excelsior. Third, the Rev. F. D. Horner with Orion. Fourth, Mr. T. Baker with Overhaw. Fifth, the Rev. F. Tymons, Dublin, with Sir J. Paxton. Sixth, Mr.

Thos. Haynes with William Lea. Seventh and ninth, Mr. D. Woolley with Masterpiece. Eighth, Mr. H. Housley with Ajax. Tenth Mr. T. Haynes with a seedling. The best feathered Byblœmen was John Hart, from Mr. W. Dymock, a new variety of great promise, and he was placed second with the same; third with a seedling, and fourth with Lady Denman. Mr. D. Woolley was fifth with King of the Universe, the Rev. F. D. Horner fifth with Mrs. Jackson, Mr. T. Baker seventh with Bessie, Mr. Dymock eighth and ninth with unnamed varieties, and Mr. W. Prescott tenth with Guido. The best Flamed Byb. was Talisman, from the Rev. F. D. Horner; Mr. T. Haynes was second and third with King of the Universe and Alice Maude, Mr. D. Woolley third with Trip to Stockport, seventh with Adonis, and eighth with Lord Denman, Mr. T. Haynes fifth with Duchess of Sutherland, and tenth with Salvator Rosa, Mr. T. Baker sixth with Bessie, and the Rev. F. D. Horner ninth with Talisman.

In the class for the best Feathered Rose the Rev. F. D. Horner was first with Heroine, second with Charmer, third with Industry, and sixth with Modesty, a pretty quartette of feathered Roses. Mr. S. Barlow was fourth with Modesty and tenth with Sarah Headly, Mr. D. Woolley fifth with Heroine and ninth with Julia Farnese, Mr. W. Dymock seventh with a seedling, and Mr. T. Baker eighth with Mrs. Collier. The Flamed Roses made a strong class. Mr. D. Woolley was first with Aglaia, fourth with Mabel, and seventh with Kate Connor; Mr. T. Haynes was second with Aglaia and third with Industry; Mr. S. Barlow was fifth with Lady Sefton, sixth with Anastasia, and eighth with Celestial; Mr. J. Thurston ninth with Amy, and Mr. W. Whittaker tenth with Mrs. Lea.

The breeders always make a charming display on this occasion. Mr. J. Thurston had the best six, showing Bizarres, Sir J. Paxton, and a seedling, byb., two seedlings and roses, Annie McGregor and a seedling. The Rev. F. D. Horner was second with a stand of six very fine flowers, having Bizarres Sir J. Paxton and Dr. Dalton, bybs. Talisman and Glory of Stakehill, roses, Lady Burdett Coutts and Lady Grosvenor. Third, Mr. S. Barlow, with biz. William Lea and Sir J. Paxton, byb. Nimbus and seedling, roses Annie McGregor and Mr. Barlow. Fourth, Mr. T. Haynes; fifth, Mr. W. Whittaker. The Rev. F. D. Horner had the best three breeders, one of each class, staging excellent blooms of Biz. Dr. Dalton, Byb. Glory of Stakehill, and Rose Lady Burdett Coutts. Second, Mr. S. Barlow, with Biz. Lord Denman, byb. Glory of Stakehill, and Rose Annie McGregor. Third, Mr. W. Whittaker, with Biz. Sir J. Paxton, byb. Delicata, Rose Mabel. Fourth, Mr. H. Housley; fifth, Mr. A. Fearnley; sixth, Mr. John Wood; seventh, Mr. J. Thurston; eighth, Mr. J. Boydell. The best Bizarre breeder was Sir J. Paxton, from Mr. Haynes, who was also seventh with Richard Yates. The Rev. F. D. Horner was second with Dr. Dalton, and third with Excelsior. Mr. W. Whittaker fourth with Sir J. Paxton; Mr. S. Barlow fifth with seedling No. 6; sixth with Lord Delamere; and eighth with William Lea. The best Byblœmen breeder was Miss Harding, from the Rev. F. D. Horner, who was second with Ashmole's Seedling, and sixth with Alice Grey. Mr. S. Barlow was third with Nimbus, fourth and fifth with the same, and eighth with a seedling. Mr. T. Haynes was seventh with a seedling. The Rev. F. D. Horner had the best Rose breeder in Mrs. Barlow, and he was second with Lady B. Coutts. Mr. D. Woolley was third with Mabel and fourth with Lord Derby. Mr. S. Barlow was fifth, sixth, and seventh with seedlings; and Mr. W. Whittaker eighth with Amy.

In addition to his already full share of awards, the Rev. F. D. Horner had the three premier flowers. The premier feather was Mrs. Cooper in his first-prize twelve; the premier flamed Sir J. Paxton in his first-prize six; and the premier breeder Glory of Stakehill in his second-prize six breeder. A first-class certificate of merit was awarded to Mr. W. Dymock, Stockport, for feathered byblœmen John Hart, a seedling raised by Mr. Walker of Winton, from Adonis, a medium-sized flower, pure in the base, of good colour, and well marked.

The sum of £67 was taken at the gates in sixpenny admissions, a fitting close to a highly successful week.

PRUNING ORCHIDS.

THE allusion on page 441 to the pruned plant of *Dendrobium Wardianum* here and myself induces me to state—First, That the plant is now producing its fourth crop of pseudo-bulbs (fourth year) without the aid of back pseudo-bulbs, which have been all cut away when in flower every season, and this year's growths are at present about 2 feet high, are not nearly done growing, and are in perfect health.

Secondly, The pseudo-bulbs that have been produced since the plant was first pruned are stronger and taller than those that were produced before it was pruned, and the pruned stumps remaining plainly show this to be the case.

Thirdly, As regards showing the plant at South Kensington, I admit that might be a proper thing to do if I was so minded, but it is not a necessary course, and I am not so anxious to convince the few prejudiced sceptics who have opposed the practice as to send or take our plants about 200 miles at one's own expense merely to gratify their whims, more especially as they have had frequent opportunities of seeing our plant here, when almost passing by our door, and have not availed themselves of them, although repeatedly invited to do so. Showing results of any experiment in London is a very convenient condition to attach by those who are driven to such straits; and when contributors to the press, who vouch for their statements, generally acknowledge such conditions to be binding or necessary in all they write, I shall be ready to conform to them also. In no other profession or trade that I ever heard of are such absurd things expected or insisted upon, and it is a sign of the trammelled condition of horticultural opinion and the prejudice that still prevails amongst us that horticulture should be an exception to the rule. I submit that when a gardener says such and such a thing can be done, offers to show the proof of it to all who choose to come and see, and tells all he knows about it for others to prove it also, he does all that duty demands, and more.

Fourthly, The chief opponents of pruning Orchids of any kind have been Messrs. Thos. Baines, Crawshaw, and a few of their friends and

supporters, and who, having committed themselves to the assertion that the practice of pruning must be and is bad under any and all circumstances, now stand convicted of complete ignorance of certain phases of the culture of those subjects which they profess to, and should, know more about than most other people; and it is notorious that one of them at least has advocated more practices than he has ever proved himself either at home or abroad. In conclusion, I may add that, according to my experience, in addition to *D. nobile* and *D. Wardianum*, the following species may be pruned without injury—viz., *Cœlogyne cristata*, of the whole of the old bulbs not bearing leaves; *Dendrobium chrysotoxum*, of all leafless bulbs not likely to flower again; *D. thyrsoiflorum*, ditto. *Odontoglossums* of all back leafless bulbs not likely to produce back breaks; and ditto, *Cattleyas* and *Lælias*. When I speak of back bulbs I mean those that are usually left on for years but have become spent.—*J. SIMPSON, Wortley.*

THE PLAS, DINAS MAWDDWY.

THIS charming garden belongs to Sir Edmund Buckley, Bart., who in his day has been a pre-eminent planter of trees, and consequently a great benefactor to mankind. It is most delightfully situated, for standing by the gate opening to the carriage drive the surroundings are truly majestic. Facing the gate on the left hand is Moel Dinas, carpeted with a bright green mossy sward, and clad with Larch, Spruce, and some Austrian Firs to the very summit; in front is Moel Benddu, partially afforested; on the right the Bwlch, and behind stupendous Moel Mallwyd, all belonging to the metamorphic series of rocks, composed in the main of slate beds, some of which are profitably quarried. Moel Dinas affords an excellent example of what may be done by judicious tree-planting; for miles it is quite covered with luxuriant growth; Larch is mainly used, but a large number of Scotch and Austrian Pines are well employed. The trees stand in great need of judicious thinning, as they are getting far too thick; and the sooner this is done the better will the chances be for a very profitable return in the future. "Plant a tree, Jock, for it will be growin' while ye're sleepin'" is an excellent axiom, but subsequent treatment afterwards determine to a great extent the ultimate result, especially in forestry.

Through the kindness of Mr. James Laurie, the excellent gardener and estate manager, I was conducted about half way up Moel Dinas, and standing by the large reservoir which supplies the garden and hall with water, a splendid view of the grounds and valley was thoroughly enjoyed. The reservoir contains a large water supply, the force being so great that a jet from a 4-inch hose can be thrown over the tower of the Plas. Scanning the slaty crannies of these piled-up rocks several plants were noticeable even at this early season. There was the Welsh Poppy (*Meconopsis cambrica*) starting into growth, while all the time I wished myself a bryologist, for the variety of Mosses was great. The rock stratification was very varied, and immensely interesting faults, contortions, and vertical layers were observable in a small area.

There is not so much diversity as we frequently meet with in gardens of this size, but it is almost impossible to see Conifers and Rhododendrons in finer condition; the latter grow most luxuriantly, both in foliage and bud they are the very picture of beautiful health. We cannot but envy the chance of those who will see them in bloom, for, as well as being represented by immense numbers, there are a large number of varieties, the colours being prettily associated. Evidently they are in favour with Sir Edmund; for one of his farmer tenants hard by, fearfully troubled with rabbits, asked his advice as to the most likely crop to plant to avoid the attack of this troublesome creature, when Sir Edmund replied, "Plant Rhododendrons, rabbits will not eat them," in which reply the good farmer did not find much consolation. There have been some very fine standards planted recently in the Rose garden, which in due time will present a very attractive appearance. Roses are a complete failure here, with the exception of *Gloire de Dijon*, which either as a standard or dwarf does grandly. Some very old standards are replete with excellent wood, promising a large supply of bloom; while Mr. Laurie informed me they produced good flowers till hard upon Christmas last year. The culture of other varieties, however, both Tea and Hybrid Perpetuals, appears to be a hopeless task, for they have been tried repeatedly and well, always with the same results, the small remaining examples looking miserable in the extreme; and however sad it may seem to rosarians, their culture is to be given up.

Conifers grow exceedingly well, a long row of *Wellingtonia gigantea* and *Pinus Cembra*, planted alternately about sixteen years ago, present now a very fine feature; the *Wellingtonias* have quite outstripped the *P. Cembra*, which will ultimately have to be removed to make room for its vigorous companion. A long avenue of *P. Douglassi* is a charming sight, the trees vigorous beyond measure, splendidly furnished, forming in this condition one of the most effective trees for the home woodlands, *P. Pinsapo*, *Picea grandis*, *Cupressus Lawsonianus*, the Weymouth Pine. *Araucarias*, &c., are flourishing equally well; while Portugal Laurels form large masses, which never, or very rarely, get cut in this favoured valley, the mildness of which may be gathered from the fact that an ice-house was built, but ice could not be found in the neighbourhood to fill it. Flowering Currants are conspicuous, as well as the type, the varieties *carnea*, *atro-sanguinea*, and *punica* were very showy.

The present hall or Plas is very commodious, pleasantly situated, erected in 1865 upon the site occupied by the shooting box of the once celebrated Jack Mitten, and it is here and in the immediate neighbourhood that many of his vagaries and idiosyncrasies were planned and carried out. Since those days the scene is altered, Jack would scarcely recognise

the spot where he used to shoot wild ducks in his shirt. At that time it was formed of a series of knolls, bogs, and small lakes; now a river channel has been cut, which merges into the Dovey, the very base of the valley is drained, and not at all a likely home for wild ducks.

There is a compact series of glass houses, mostly utilised for fruit culture, the collection of plants being not very extensive. There are four Peach houses, two lean-to and two span-roofed, each averaging about 40 feet long. Early forcing is not practised, as the fruit are most in demand later in the season than when the first crop would be produced by hard forcing. The trees are mostly in excellent condition, crowded with blossoms and young fruit, with only inside borders. The varieties most prized are Prince of Wales and Bellegarde, the former especially. About thirty varieties of Grapes are grown in five good-sized lean-to vineries and a large Grape conservatory. Alnwick Seedling succeeds admirably, producing an excellent crop, but is not largely grown, as its peculiar flavour does not gratify all tastes. Mr. Laurie fertilises the flowers with pollen from Black Hamburgh, and ripens it in a Muscat temperature, when it keeps well, and is of an excellent flavour. In a large house Muscat Vines are just opening into blossom, also Black Hamburghs next to it are in nearly the same condition, the desideratum being to get the Vines in both houses in flower at the same time, so as to utilise the Hamburgh pollen for the Muscats. All the vineries have large inside and outside borders, but the former are not of much service, as but few roots are found therein. A splendid lean-to orchard house is filled with Plum trees; it is a great length, and contains many varieties; standards planted out in the front, and trained specimens upon the back wall. An annual crop is sure here of the finest fruit; most of the trees are either in bloom or just past, and the outlook is most promising. Kirk's Superb, Coe's Golden Drop, Victoria, Jefferson's, Magnum Bonum, Purple Gage, Pond's Seedling, and Belle de Septembre are the varieties most highly esteemed and most remunerative. Three Pine pits accommodate a healthy batch of suckers, successional and fruiting plants; from eighty to 100 of the latter are handled yearly, mostly Queens, a few Black Jamaica being grown.

The most noticeable plant-house is the Palm stove, where are some fine samples of *Livistonia sinensis*, *Areca sapida*, *A. Baueri*, &c., as well as some fine *Gymnogrammas*. The conservatory was gay with flowers, *Salvia rutilans* being especially attractive; it flowered all through the winter in ordinary greenhouse temperature, and is likely to do so for some time, large plants being very attractive. A good collection of Ferns, as well as other stove and greenhouse plants, are grown.

The kitchen garden is some distance from the houses, on the other side of the river. It is about four acres in extent, walled in, replete with fruits large and small; the latter and Strawberries do remarkably well, but Apples, Pears, and Plums produce only moderate crops. The soil is not by any means the best for their accommodation, and could not be made so without a large outlay, as it is chiefly composed of shaly debris, and being in the very bed of the valley is perhaps too moist during the winter and spring. Some kinds do better than others, but none is fully satisfactory. A large collection of Pears are grown, mostly rigidly trained and spurred; many of these were formerly fruited in the orchard house, but the labour in connection therewith was so great that it was decided to plant them out. Hard by is a small field about an acre and a half in extent, which has been planted with Gooseberries and Currants as an experiment upon Lord Sudeley's plan; the bushes are arranged 3 feet between each and 6 feet between the lines, Strawberries, Onions, and Potatoes occupying the ground between.

Gardeners or those interested in forestry visiting this neighbourhood will meet with genial hospitality at the Plas, and they cannot do better than cast anchor at the "Buckley Arms," where the good host and hostess will do everything to make them comfortable; and if a follower of Isaak Walton a day or two may well be spent with rod, line, and gatt in the River Dovey, where salmon, trout, and other favourites may be easily tempted; or the lover of British wild flowers may find many a rarity, and greatly enrich a moderate herbarium.—*J. T. R.*

NOTES ON PLANTS.

LILIUM AURATUM.—Having read the interesting remarks respecting the above, I have sent the following notes. We have here planted out in the open border in the kitchen garden, sheltered a little by being planted between pyramid Apple and Pear trees 10 feet apart, about sixty clumps of *Lilium auratum*, from three to six bulbs in each, with no other protection but the walled-in garden. These have been obtained from two lots of imported bulbs; 100 were planted about seven years ago, and 100 three years ago. I sent a statement to the Journal respecting the first lot about six years ago. I have read of one stem having fifty-three blooms (all perfect) in a pot; or, rather, it had grown in the same pot for five years. Then, again, of one blooming in Mr. McIntosh's garden at Weybridge with seventy blooms. Then your valued correspondent "Theta" records sixty-five blooms on a plant in a Rhododendron bed. Your most interesting correspondent, "A Thinker," mentions one with seventy-five blooms on a single stem. This quite surpasses mine, as our largest one only had thirty-four this year—like a large broom 6 feet high. Some of the best had the following numbers of flowers:—Twenty-eight, twenty-five, twenty-three, seventeen, fourteen, and many nine to twelve each, and were from 4 to 12 feet high, and the compost these are planted in is peat, turfy loam, wood ashes, and coarse sand, and they are well supplied before flowering with liquid manure; the subsoil is for the most part red sand, well drained, as the water never stands on it. The bulb with thirty-four blooms was one of a few that I accidentally broke the stem off

in transplanting two years ago, and put them out in a south border fully exposed to the sun. I have a few clumps of the common White and the Orange Lily, which seem to grow and bloom well with the same treatment. I quite agree with "A Thinker" respecting the surface roots. I would sooner cut the stem off and give the bulb a rest than rub the roots off. I have often had to place the Lilies into larger pots to protect the surface roots. I am inclined to think the roots are caused by a close and moist atmosphere, as we seldom meet with many out of doors. Our plants of *L. auratum* are more promising than ever this year; some of the stems are now 2 to 3 inches in circumference and 1 to 2 feet high.

SCILLA CAMPANULATA.—This bulb, I find, can be taken up from the border for pots, and then makes a good show. Some have over thirty flowers on a stem, and are about 12 to 18 inches high. Another one sent me, an early-flowering one (blue), with two leaves, broad, like Lily of the Valley, with flower stems 6 to 8 inches high, in bloom with the Snowdrops, which is probably *Scilla bifolia*.

DEUTZIA GRACILIS.—This makes a useful plant if cut back the same as Raspberries after flowering, and a few of the strongest young growths encouraged and tied in the centre of the pots, well ripening the wood before forcing. I have seen some fine pyramidal plants from 2 to 3 feet high; some of the sprays with thirty blooms on a stalk.—G. C., *Warwickshire*.

LAWN MOWINGS v. ONION MAGGOT.

HAVING seen some reference to the above in the Journal, I send a note on a simple but good remedy to stop this troublesome pest, for it is most disheartening to gardeners to lose their crops, especially where there is a large demand. In one garden of which I had charge I had a failure two seasons in succession, both with Carrots and Onions, and I was told by a labourer who had been on the estate for some years that he had never seen any good Onions grown in the garden; but thanks to the Journal, I am pleased to say that the following season I had as good a bed of Onions as neighbouring gardeners. I had tried soot, lime, salt, and very strong liquid manure from the stables, but all to no avail, so as I saw the following simple remedy I resolved to try once more, and found it a good one. When the Onions are large enough to see them well the short grass from the lawn mowings is scattered thickly over the ground between the rows, and it is also good for Carrots as well. A gentleman who saw me doing this doubted its success, but was amazed when he saw the Onions harvested. The gardener who described it said he had tried the remedy for ten years without a failure, so it may perhaps benefit some who did not see the Journal at that time, as I think it our duty to help one another out of trouble if it lays in our power.—J. GILBERT, *Morrow, near Guildford, Surrey*.

THE BO-TREE AT ANURADHAPURA.

If the stories about the original Bo-tree at Buddha Gaya can be believed, it is said to have been planted by Brahma himself. The Buddhists attribute it to Dutugemunu, King of Ceylon. One account of the transfer of the branch to Ceylon is as follows:—"At the time on which Dewenipiyatissa reigned in Colombo (B.C. 306) one of the four branches of the original tree in Dambadiwa is said to have been surrounded by a yellow line, when it was commanded by a son of the King, who had become a *rahat*, to depart to this island. Then, in an instant, as if cut by instrument, it came through the sky and was planted at Anuradhapura. Many of the Sinhalese go on pilgrimage to the place and think that the very tree produced from the miraculous branch is still alive, and that the other Bo-trees in the island are derived from this source." Here is another account: "Shortly after the building of the Thuparama dagoba had commenced, some of the King's female relations expressed a wish to become nuns. Mahinda accordingly sent for his sister, Sanghamitta, who had entered the order at the same time with himself. Taking leave of her father, she brought over with her a band of nuns and instructed the new disciples in the precepts of Buddhism, their principal occupation being the hearing and repeating of the sacred books. Sanghamitta also brought over with her a branch of the sacred Bo-tree, the tree then growing at Buddha Gaya on the site of the present temple, and then believed, not perhaps without reason, to be the very tree under which Gautama had experienced that mental conflict which is called his attainment of Buddhahood.

"That precious memorial of their revered teacher was planted at Anuradhapura, a little to the south of the Ruwanwella dagoba, and, strange as it may seem, there it still grows. The tree could scarcely have lived so long had it not been for the constant care of the monks. As it showed signs of decay, terraces were built up around it, so that it now grows more than 20 feet into the surrounding soil; for the tree being of the Fig genus (*Ficus religiosa*) its living branches could then throw out fresh roots. Where its long arms spread beyond the enclosure, rude pillars of iron or masonry have been used to prop them up, and it is carefully watered in seasons of drought. The whole aspect of the tree and its enclosure bears evident signs of extreme age; but we could not be sure of its identity were it not for the complete chain of documentary evidences which has been so well brought together by Sir Emerson Tennent." According to Tennent, "The Bo-tree of Anuradhapura is, in all probability, the oldest historical tree in the world. It was planted before Christ, and indeed is now (or rather was when Tennent wrote his book) 2147 years old. Ages, varying from one to four thousand years, have been assigned to the Baobabs of Senegal, the Eucalyptus of Tasmania, the Dagon-tree of Oratava, the Wellingtonia of California, and the Chestnut of Mount Etna. But all these estimates, however ingenious, must be inferential, whereas this age of the Bo-tree is a matter of record. Its conservancy has been an object of solicitude to successive dynasties, and the story of its vicissitudes has been preserved in a series of continuous chronicles amongst the most authentic that have been handed down by mankind. Compared with it, the Oak of Ellerslie is but a sapling, and the Conqueror's Oak in

Windsor Forest barely number half it years. The Yew trees of Fountains Abbey are believed to have flourished there 1200 years ago; the Olives in the garden of Gethsemane were full grown when the Saracens were expelled from Jerusalem, and the Cypress of Sorna in Lombardy is said to have been a tree in the time of Julius Caesar; yet the Bo-tree is older than the oldest of these by a century, and would seem to verify the prophecy pronounced that it will flourish and be green for ever."—(*Ceylon Paper*.)



HARDY FRUIT GARDEN.

Young Trees.—The growth of young trees is now sufficiently advanced to render close attention to stopping and training necessary, and it is only when a tree is young and the growth pliant that a correct elegant outline can be imparted to it. Very curious are the different conceptions of what a pyramidal or conical form really is. Some are kept by severe pinching or pruning to a mere column of the same diameter at top as it is at bottom. Others may be seen of an irregular rotund outline, but without any approach to the tapering form of a true cone. To have a pyramid of really good form the lower tiers of branches must have at least two years' start of the upper ones. The growth will then be sufficiently well balanced for the lower branches to be healthy, vigorous, and fruitful. Stopping and training must, therefore now be in full activity. We must not rest content with simply training the stem to a stake, but the branches must also be trained if they require it, and be drawn outwards sufficiently for symmetry and for a free admission of air and light to the stem. In due time they become stout and rigid, and then the work of the trainer is accomplished. Our remarks about pyramids apply to all other young trees of every form. Balance of growth must be maintained to secure a just distribution of vigour. Take for example the palmette verrier among wall trees and espaliers. It is claimed for this form that the lower branches have as brisk and vigorous sap action as the upper ones, but it could not be so if we did not take especial care that they should have the requisite start of a year or two in advance of the upper branches. Encourage a free, vigorous, and unchecked growth in young Peach and Nectarine trees. We have frequently had main branches with laterals well set with triple buds—all the growth of one season, and the fruit in the following year has been very fine. The means necessary to promote so desirable an end are well drained fertile soil, mulching, watering, and above all things clean healthy foliage. Never suffer blight or insects to spread far among the foliage. A healthy tree planted aright only requires plenty of clean water upon both sides of the foliage, generally by using an ordinary syringe, or in extreme cases by sponging. Care and pains are requisite to force the water well beneath the foliage; but it can be done, and if done in time there need be no loss of foliage from the ravages of red spider.

Lateral Growth.—Peas, Plums, Peaches, Nectarines, and Apricots now have the fruit swelling so fast that disbudding and pinching may proceed forthwith. We like to do this in twice rather than stopping or disbudding every shoot at once, taking the forward and most prominent growth the first time, and leaving the more backward growth for a week or more according to the weather. All leading and side growth left upon the trees is made fast as it becomes long enough, especial care being taken that no shred or string is bound tightly about young swelling growth.

Fruit-thinning.—The thinning of Apricots is finished, Peaches and Nectarines are being done; they have set so thickly that there is some risk of too many being left upon the trees. Our plan is to thin moderately at first, and to go over the trees two or three times subsequently—the last time being after the stoning. Many sorts of Pears are ready for thinning, but not all, as we hoped the crop is a heavy one even upon sorts which we regard as shy bearers; and it will be such a favourable year for a Pear Congress that we venture to express a hope that a great show of this popular fruit will be held in the autumn. Apple blossom is so backward that the crop generally may be considered safe, and the trees are so thickly covered with blossom that the crop must be an abundant one.

Bush Fruit.—Do not use hellebore powder to destroy Gooseberry caterpillars; it is a deadly poison, which we regard as a dangerous thing to use in this way. Hand-picking will soon get rid of the pests, and the fruit can be used at once without risk. Thin out Raspberry suckers, retaining only enough for next year's crop. Red and White Currants may have the side shoots pinched as it becomes long enough, the leading growth being left untouched to promote a brisk circulation of sap.

FRUIT FORCING.

PEACHES AND NECTARINES.—**Earliest House.**—The trees from which full crops of fruit are gathered through the latter part of May onward require careful management to keep them in health and vigour for a number of years, as Peaches and Nectarines that are forced through the winter months have to mature their growth and rest through the latter part of the summer. To avoid getting the wood over-ripe it will be necessary to keep the house as cool as possible after the fruit is gathered by ventilating to the fullest extent, exposing the trees in showery weather, and removing the roof-lights when the wood is ripe and the buds are formed.

On bright days the atmosphere may be kept cool by damping the paths, &c., frequently with cold water. As the trees are cleared of fruit, which will be the case where such varieties as Alexander are grown, all shoots that have supported fruit and are no longer required should be cut out to make room for the shoots intended to supply next year's crop, it being imperatively essential that they have room for the free admission of light and air, and full exposure of the foliage to the influence of water ejected through the syringe in order to keep it free from red spider, as it is of the utmost importance the foliage be clean and healthy. Any gross laterals should be stopped or entirely removed, but a very close system of stopping is not advisable, as progressive growth keeps the root-action active, but spray must not be encouraged and then removed in quantity, as that would cause a check, hastening the ripening of young wood, and is the reverse of what is required, a steady progressive growth being important.

Houses in which the Fruit is Ripening.—Unless the weather be wet and cold fire heat will not be necessary, but as sudden depressions are inimical to flavour the command of gentle fire heat with a free circulation of air will favour the swelling and finishing, especially of the late varieties. Although a somewhat drier condition of the atmosphere is advisable when the fruit is ripening than during the swelling, it is necessary that moderate air moisture be maintained by damping the house occasionally for the benefit of the foliage, and the border must not under any circumstances be allowed to become dry, as lack of moisture at the roots is certain to favour red spider and to interfere with the proper development of the buds.

Trees Swelling their Crops.—Afford copious supplies of tepid water through a mulching 2 or 3 inches thick of manure, supplying weakly trees carrying full crops with liquid manure. This more particularly applies to trees in inside borders, but trees having the run of outside borders as well must not be neglected in mulching, also watering if the weather is not such as to insure their thorough moisture throughout. Syringe thoroughly twice a day, omitting the afternoon syringing, however, on dull days, so as to have the foliage dry before nightfall, and damp available surfaces with liquid manure occasionally in the evening. Admit air early, increasing it with the sun heat, maintaining through the day at 75° to 85°, and close at 80° with plenty of moisture. Keep the laterals in check by pinching, but if there is space a rather free extension will cause the fruit to swell to a large size; at the same time there must not be any crowding of the principal foliage, which must have free exposure to light and air for the solidification of the wood, and to keep the foliage free from red spider. It is advisable to leave the ventilators open constantly, an inch or two at the top of the house will cause a circulation, and prevent that condition after which the foliage is liable to be scorched under powerful sun—viz., a close vitiated atmosphere through the night. Allow the temperature to fall to 65° or less through the night.

Trees Stoning.—Do not hurry the trees through the stoning process; a temperature of 60° to 65° by artificial means is ample, with a rise of 10° to 15° from sun heat, not allowing an advance above 70° without full ventilation. Keep the borders well supplied with moisture, the trees syringed twice a day, and only encourage as much foliage as can have full exposure to light. Avoid sudden depressions of temperature, which can only be done by early air-giving, and reducing it as external conditions necessitate. Keep the shoots tied down, not too closely, and when the stoning is completed remove any superfluity that has been left to meet contingencies. A fruit to every square foot of trellis covered by the trees is ample, but Nectarines may be left a little closer.

Late Houses.—Tying in the young shoots intended for carrying next year's crop, as well as all extension growths, must have timely attention, pinching all intermediate growths not required for furnishing the trees; afterwards allow a moderate extension, always being careful to avoid overcrowding, as somewhat free growth is advisable until the fruit takes its last swelling. The inside borders should be well mulched with manure, lime rubbish, and turfy loam, and water given when necessary in sufficient quantity to pass through into the drains. Ventilate fully in mild weather, and freely whenever favourable.

CHERRY HOUSE.—Directly the fruits are gathered let the trees be well washed morning and afternoon with the garden engine, continuing this until the growth ceases. In the event of aphides having obtained a footing they must be destroyed by fumigation or syringing with quassia water, repeating this until the trees are free of the pests. The main point now is to secure the proper development of the buds for next year's crop, and in the case of trees that have been forced for consecutive years the process must not be hurried. It is necessary in the period between now and when the growth is completed to have the soil about the roots in a proper state as regards moisture, and in the case of trees which are not over-vigorous, or those enfeebled by heavy crops of fruit, it will be necessary to assist them by means of weak liquid manure. All the ventilators should be fully opened and left so until the removal of the sashes.

THE FLOWER GARDEN AND PLEASURE GROUND.

Preparing for Planting.—Where the flower beds are occupied with spring-flowering plants the summer plants will in most cases be put out much later than usual. The former invariably leave the ground in a dry exhausted state, and the later the beds are replanted the greater the need of a good dressing of rotten manure. In our case we not only dig in a quantity of manure, but many of the beds receive a surface dressing of either leaf soil or thoroughly rotten manure, which was originally the short grass from the mowing machine. Some of this is worked in about the roots of the plants and the remainder acts as a mulching. Thus treated,

Verbenas, Violas, Calceolarias, Heliotropes, Lobelias, Begonias, Dahlias, and other moisture-loving, once they are established, will thrive during a hot and dry summer without the aid of the watering pot. The ground should not be made rich for the various sorts of Pelargoniums, as these, if they grow strongly, either do not flower well or become too crowded. If the newly dug beds are found to be too dry to work well they should receive an overnight soaking of water, and in the morning it will then break down readily. Those beds that have been unoccupied and laid out roughly all the winter will work easily and may be planted most expeditiously. They should be stirred to a good depth with fork, so as to break up the clods without bringing them to the surface. If the surface is well pulverised the fine soil will work in with the roots and the plants will do well.

Planting the Beds.—The beds being raked level and made tolerably firm, the first proceeding should be to put out any hardy or half-hardy edging plants that may be employed, such as Echeverias, Sempervivums, Sedums, Antennaria, Variegated Arabis, Golden Thyme, Cerastium, and Ajuga. The beds being well "set up" and the surface level, the sloping margins may be faced with any of the above-mentioned plants another dwarf-growing edging plant, such as either Golden Pyrethrums, Lobelias, Koniga, Ageratums, Festuca glauca, Dactylis glomerata, or later on the more tender Coleus Verschaffelti, and Alternantheras may be disposed in a single or double line just inside of the outer edging. This method of arranging the edging gives a finish to the beds, as it does away with the objectionable bare slopes. In the case of small beds the centres always look best when filled wholly with one kind of plant; or to be plain, with one, or at the most two rows or rings of edging plants, and the remainder of the space with taller-growing plants, the colour contrasting agreeably with the edging. In large beds also we prefer to have in the centre either a mass of one colour or a judicious mixture, such as Iresines and Calceolaria amplexicaulis, Silver Variegated or bronze-leaved Pelargoniums and blue Violas, Iresines and yellow Violas, Tuberos-rooted Begonias, and a groundwork of Mesembryanthemum, Pelargonium Manglesi and Verbena venosa, Veronica Andersonii variegated, and Verbena venosa, mixed seedling Verbenas, and other pleasing combinations that may suggest themselves to an intelligent planter. These centres may be surrounded with a broad band of some other suitable plant, and an outer edging or edgings of dwarf plants. Planters will find strong wooden compasses of great service in marking the lines near the edges; failing these the lines may be formed tolerably correct with the back of a rake. When once the outer lines are planted the centres may be filled easily and effectively. If the attempt is made to plant the centres first a great difficulty will most probably be experienced in finishing off the beds properly. Spaces must be left for such tender plants as Iresines, Coleuses, Heliotropes, and Alternantheras, as if these are planted early a frost or cold rain may greatly damage them. The sub-tropical beds ought also to be the last to be filled, the second week in June being quite early enough for these even in warm localities. No plant should be put out with the ball in a dry state, and each when planted must have the soil well worked about the roots with a trowel, and be properly mixed. The majority will require to be watered in, but the ground ought not to be kept in a saturated state, especially when the nights are cold. Those not well hardened off, or which are put out with but little soil about the roots, should be roughly protected with branches of evergreens both from bright sunshine and slight frosts.

Bulbous-rooted Plants.—Where these must necessarily be lifted in order to make room for the summer bedding plants, they ought not to be at once stored away in boxes. They in common with any that may have been grown in pots, including Hyacinths, Tulips, Crocuses, Snowdrops, and Narcissi, should be carefully bedded-in in light soil till such times as the foliage has ripened, when they may be lifted and stored away in boxes of sand. As a rule Crocuses, Snowdrops, Tulips, and Narcissi thrive and flower most freely when left in the ground, and those in the mixed borders ought therefore to be marked with durable pegs and not disturbed.

THE BEE-KEEPER.

THE SEASON—CLEANING FLOORS.

UNTIL now there has been little appearance of summer. Since the beginning of May there has been frost every night, snow more or less every day, with fitful gleams of sunshine enticing the bees out, but to be overtaken by snow or rain, which prevented numbers returning to their hives. Doubtless much of the brood on outside combs has perished by the bees deserting their charge, being compelled to concentrate themselves on account of the excessive cold, which has been collectively of frost alone in a fortnight's time 60°, with very low day temperatures. Those who have been wise enough to let the bees spread their own brood may be thankful, because the loss to those who spread it must be very great. If such weather had continued, and with an increasing teeming population in the hive, great care would have been exercised

that none were short of food. Neglect of that would render the hives abortive for the season. Nor must peameal be neglected either; both syrup and meal are necessary to carry on breeding, and now is the time to keep that up. My own bees during the past two weeks have carried in a large quantity of peameal, quite unprecedented at this season of the year, having failed entirely to get the advantage of flowers owing to the weather. I have not as yet required to feed, and in only one or two instances would it have been necessary if the weather had not improved. Even with the untoward season and heavy loss of bees through cold, all my stocks are in a state fit to be supered. So far as I can remember, it is forty-six years since we had such a protracted and cold spring; but by close attention to our bees that they do not suffer from want they may yet be able to carry in sufficient honey for their own use till next year and a surplus to their master which may repay him many fold for his attention to them.

In the year 1876 I exhibited at the Caledonian Apiarian Society, held at the Kibble Palace Botanic Gardens, Glasgow, 700 lbs. of honey in supers, the produce of six hives, the Heather harvest not being included. In all these supers there was not a single brood cell, and only once during my life did I ever find brood in a super. It cannot, therefore, be ceded that a system so successful with one should be so with others, if they but follow the advice given in this Journal. The excluder zinc is not only unnecessary but is a hindrance to bees in their labours, while the open centre space is injurious to the brood. When or where the first super was obtained I do not know, but it is a foregone conclusion that the art of supering was perfected and thoroughly carried out in Scotland before it was even attempted in any other part of the world. Doubtless the ancients with their bell-topped straw hives would observe, on breaking up a hive, the natural instinct of the bees to store overhead the honey intended for winter use, would suggest the conical but flattened-at-the-top straw hive, surmounted with the again bell-shaped "straw cap." It is quite reasonable to suppose that this little improvement led observant bee-keepers to invent the horizontal, sectional, or Stewarton hive proved years ago to be the best for supering.

Cleaning floorboards should still be attended to; and great care must be exercised in this, that all the *débris* be buried. When this is not done the bees are attracted to it and is liable to cause fighting. Even worse than that may occur; if foul brood is present in any of the hives the disease is certain to be spread, as the bees work upon the *débris*, carrying it into their hives as they do pollen. The same danger arises when the *débris* is thrown out by the bees themselves. The sanitary or perforated zinc floor is a great preventive against the spread of disease if proper caution be used. The *débris* and parasites fall on to the false bottom, so that the bees cannot expose it outside, and the bee-keeper can, by burying it and the parasites together, prevent the further spread of either them or disease.—A LANARKSHIRE BEE-KEEPER.

P.S.—ERRATUM.—In the first line of the last paragraph of my article, page 406, the fifth word, "not," should have been "most injurious."

BEES.

ROBBING—LOSS OF QUEEN—BEE-KEEPERS' ASSOCIATION—EARLY SWARM.

ROBBING is entirely due to want—a colony short of provisions—and this may arise through extracting the honey in summer, especially if the weather for replenishing the abstracted stores is unfavourable or the honey harvest so far over as to be represented by insignificant gleanings. This was the case last season, and is it not always so? Extracting is the great incentive to robbing. Now, if honey is extracted, surely the necessity arises for feeding should unfavourable weather follow. Then strong stocks late in summer, but with indifferent stores, seek to replenish them, and fasten on any weak stocks which, from overswarming or late swarming, have ample stores, but are numerically weak. This, again, is a clear case of want—neglect in feeding. Strong stocks in spring send out scouts scrutinising other stocks, everywhere seeking a weak point or an unguarded entrance. Soon, if the prospect of attack be favourable, a return

is made with others, and it is soon seen whether the assault will be made in earnest or not. If the besiegers gain an entrance it is likely a considerable amount of fighting will be done even before the besieged are allowed to remain masters of the situation, but if the besiegers make and keep a breach, it generally ends in the besieged succumbing. Now, had the strong stock been fed it would not have robbed but remained content. Energy expended in robbing would have been utilised in breeding. I make no question, so far as my experience goes, that robbing is a consequence of healthy populous communities of bees running short or being likely to run short of provisions. Hence the first and most important duty imposed upon the keeper of bees is feeding. If strong colonies in nature destroy the weaker, then, we are bound to allow, the strong would become even stronger, and the race surviving the fittest, but this is foreign to feeding, as a poor stock allowed to recuperate will become everything desired; indeed, I look upon feeding as the most important factor in bee-keeping, and a certain preventive of a populous but hungry community robbing its neighbours. Feeding weak stocks will only encourage strong unfed stocks to rob them, as is the case when only the weak ones are fed and the strong neglected, although the needs of the latter may be as pressing as those of the former.

Loss of queen arises from a variety of causes, but I only wish to allude to one which arose last year through my eagerness to increase my stock. I lost six stocks—four old ones and two early swarms of the current (1884) year. I attributed the loss of the two last to robbing, but the other four or old stocks were due to the loss of queens or over-swarming, the hives, by the latter process, being much depopulated, and no breeding going on until a late period. They were numerically weak, though with plenteous stores, which only make them more attractive and an easier prey to robbers; but I feel certain that more than one of the queens belonging to those hives were lost on the bridal trip, as the bees suddenly became restless, ran about the entrance for some days, until at last they became listless. I believe they were lost from no other cause than having the hives too close together, for as I made swarms I put the swarm in the place of the stock, and had them as close together as they would stand. I concluded that the queen in returning entered another instead of its own domicile. Anyway, I shall give them more room in future.

Last year I had a prospectus of a bee-keepers' association. Among other things enumerated was that of the association's desire to encourage bee-keeping amongst cottagers. This struck me as a most laudable object, a means of making country life more profitable and enjoyable, and likely to keep the labourers in the field instead of driving them to the workshop. I found no cottager here kept bees, and though I only kept another's bees, I asked and obtained permission to give cottagers with a garden a hive of bees, and start them bee-keeping. This, I thought, corresponded with the ideas of the association exactly; but it was decided to make the offer upon one condition, which was, that the possessor of the bees would not allow those that made a trade of bees to bring other hives into the village. Whilst thus considering, the very class it was proposed to exclude had forestalled us, and planted hives to the number of twenty-six within 600 yards of our own apiary, and in two of the cottagers' gardens. It was evidently too late, but as nothing comes of good resolutions unless they are put into practice I was still permitted to make the offer, which was declined, and a counter one made by the trader—viz., to take over the charge of our bees, as we complained of his robbing ours, he undertaking to insure ours against robbing, saying, "Suppose you only keep bees for a supply of honey to the house." Thus, we must keep our bees on a war footing, and submit to providing a large forage ground from which we cannot derive more than a third of the advantage.

In this parish we were the only bee-keepers; within a mile there was another apiarian, and between us we had a dozen stocks. Suddenly twenty-six are placed in our midst—German and half-bred, also Ligurians and Carniolians, with the result that one loses half a dozen, and the other has an indifferent season. The consequence is, bee-keeping is extending among cottagers with the difference that the profit does not remain with them. The trader gives 6d. or 1s. for the standage of each occupied hive, and as the bees are only in two gardens the value of the bees to the villagers is practically nil. I need not say any subscription of mine will never go to encourage bee-keeping on such lines. I do not, of course, attach any blame to the trader or to the association in the endeavour to secure to the country its wealth of resource, but I think no society will increase its members which allows avowed objects to be used for trade purposes contrary to the spirit of the subscribers.

I had a swarm on May 3rd. It came off without notice about 1 p.m., settling on a Fir-pole fixed in the ground, and to which a Rose, Honey-suckle, and Clematis are trained. The bees had to be brushed off, and though a majority of them were got into a galvanised bucket the queen was not secured at the first attempt; but I saw her afterwards on the ground, and whilst about to seize her majesty I lost the opportunity through pointing her out to an on-looker anxious to see a queen. The queen flew direct to the Fir-pole, and soon was lost amid her subjects. I got her in at the second attempt, and had them in position within the hour. I gave them a bar of comb with honey, and they took a pint and a half of syrup on Sunday evening. With feeding I had no doubt of their doing well, especially as they have plenty of comb ready, and on Tuesday, May 5th, bees entered heavily laden with pollen. Since I put in the combs of honey Carniolian robbers have appeared, but it clearly is no use this time, and the rascals dare not alight.

I felt rather anxious, as I had not seen any drones prior to the issue of the swarm, but on Tuesday (May 5th) I saw them abroad, very strong and active on the wing, so that I now feel at ease for the season.—G. ABBEY.

TO CORRESPONDENTS

* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We

root disease has been figured and described in the Journal by Mr. Worthington G. Smith; and as the numbers containing the illustration and notes in question are out of print we reproduce them, to make the matter plain to you and others:—"The root-nodules are generally assumed to have a fungus origin, but the Rev. M. J. Berkeley long ago described the disease, and showed it to be caused by a parasite of another nature. The description he illustrated with the utmost accuracy. It would seem that the pest which causes the mischief is not always readily seen, or maybe it escapes into the surrounding soil, or, after working the mischief, perishes; but that it is sometimes difficult or even impossible to detect, Mr. Berkeley himself confesses. For our part we have frequently seen the interior of the nodules just in the condition described by Mr. Berkeley, with the parasites in all stages of growth, from the egg condition upwards. Our illustration represents on the left the diseased roots natural size, and on the right a thin slice through one of the nodules of the roots. The latter is an exact reflection from a camera lucida attached to the microscope, and shows the

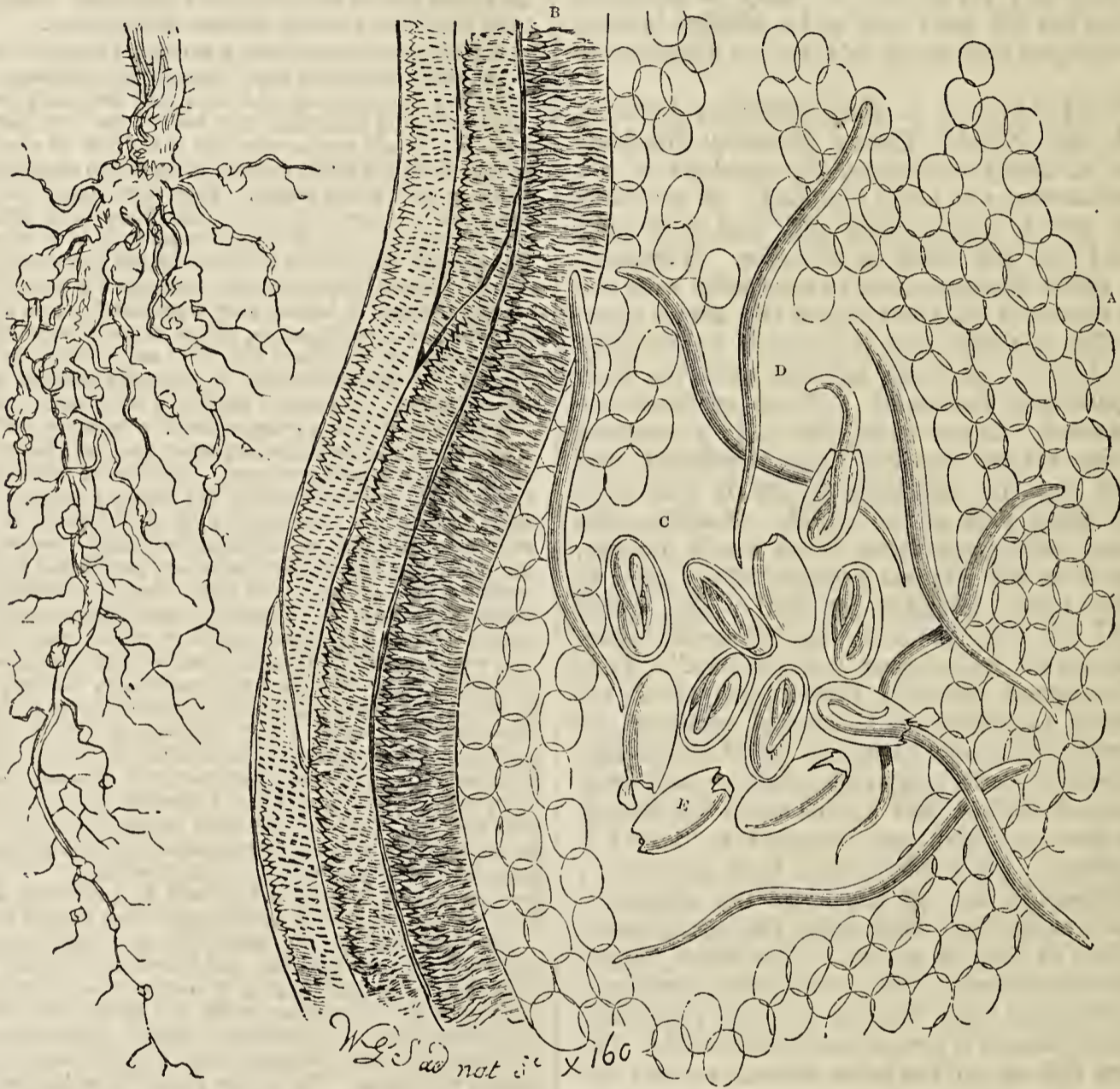


Fig. 116.—CUCUMBER ROOT DISEASE.

request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Late Apple (*C. M. Brewin*).—It is a pity the Apple you sent has been so badly kept. It will be a good late kitchen sort if it can be kept as you say till August without shrivelling.

Santolina (*J. P.*).—The Lavender Cotton (*Santolina Chamæcyparissus*) is a small shrubby plant with silvery leaves, and is very suitable for a rockery or border. It is included in the natural order Compositæ, and the flowers of this and allied species have been used like Chamomile. Plants can be procured of any nurseryman who deals in hardy plants.

Cucumber Roots Diseased (*H. H., York*).—We regret the condition of your plants, and the more so since the disease, we fear, is incurable. This

cellular tissue, A; pitted and spiral vessels, B; the worms coiled up in the eggs, C; worms emerged, D; and empty eggs, E, from which the worms have escaped. Mr. Berkeley refers these parasites to vibrios, which belong to the infusoria (properly confervoid Algæ), common in foetid water, &c., and always, we believe, extremely minute in size; but it will be seen from our figure, which is enlarged 160 diameters, that the animals there shown are just over one one-hundredth of an inch long, whilst vibrios are ten times smaller, and do not arise from eggs, but increase by the formation of new joints and separation at the articulations. The parasite appears to us to belong rather to the oviparous section of the genus *Anguillula*, which includes the 'vinegar eel,' and except that it is only about one-half the size, it is very similar in all stages of growth to *A. Tritici*, an eel found infesting blighted Wheat. It is often complained that men of science cannot specify cures for the diseases they describe, but it should always be remembered that in regard to cures pathological botanists considerably resemble doctors of medicine. It does not follow that, because a doctor can tell by certain symptoms his patient may have Asiatic cholera or cancer, that he can therefore cure the disease; or because a fireman sees your house is being destroyed by fire, he can from that mere fact extinguish the blaze. Physic and water sometimes do wonderful things, and in the case of worms in the roots of Cucumbers, the best remedy is to destroy the plants, thoroughly cleanse the house, and in planting again get soil and manure from another source."

Transplanting Evergreens—Box Edging (J. L.).—August is not as a rule the proper time for this work, as the weather is usually too hot and dry. In dull wet seasons and districts some well-rooted evergreens may, with care, be successfully moved at any time, and Box edgings laid, but this is exceptional, and the work can be more safely and successfully accomplished during favourable weather from October till April. There is no better time than immediately the ground has been made thoroughly moist by early autumn rains and while it is still warm, as root-action then commences at once and the evergreens become established before winter.

Vine Roots Decayed (J. S. A.).—There is no phylloxera on the root sent, nor is it likely there ever will be in such heavy wet soil as that surrounding them. We do not believe they could exist in such a medium, and we shall be very much surprised if your Vines can long remain healthy and produce anything like good crops of Grapes. The border appears to be a heavy soapy mass, practically impervious to heat and air, and there is no wonder the roots are in such an unsatisfactory state.

Plum Trees not Bearing (F. D., Gravesend).—When fruit trees bloom freely and there is "no frost whatever" to do injury, and no excess of moisture to prevent the dispersion of the pollen, the absence of fruit is usually the result of immature wood, the trees being overcrowded with luxuriant growths. On such growths, though blossoms may form and be apparently fine in appearance, yet a close examination often reveals a defect in the organs of fructification. If your trees grow excessively, root-pruning would in all likelihood be very beneficial, digging each tree half up—that is, cutting right round one side, severing the roots smoothly, with any that strike straight down, as if preparing it for removal, but placing in the soil again and treading it firmly. If this does not sufficiently arrest the growth the other side can be treated similarly another year.

Grapes not Setting (Williams).—There is no doubt in our mind as to the cause of the Grapes not flowering and setting freely. The "greenhouse vinery" has been kept very much too damp—so damp, indeed, that the pollen has been converted into paste, and glued the anthers of the flowers together. You have not only used too much moisture for the Vines, but more than it was necessary to employ for the plants, while you have not ventilated the house judiciously. It has been too moist at night by late syringing and damping, with probably a low temperature during the recent cold weather. We have grown "Roses and other plants" in vineries for thirty years, the houses often being crowded with them, yet we never failed to have full bunches of well-finished Grapes. You say you need say "nothing about the horders as the 'trees' are quite healthy." No doubt the Vine from which you sent the best samples (which are good) is in a satisfactory state at the roots; but the roots of mismanaged Vines soon go wrong however good the border may be. Crop lightly, train the laterals thinly, ventilate judiciously, especially early in the morning, avoid late syringing, and do all you can to produce stout-textured foliage and matured wood, or the roots will soon be like the bunches, weak and unsatisfactory.

Leather Shreds for Wall Trees.—Would you kindly let me know, if you can, if there is any demand for leather strips for nailing up trees, &c., how long the strips ought to be, and the best way to dispose of them? I am trespassing on you in the cause of charity. A leather case cutter lost his sight a year or so ago, but is now able to follow out his trade to some extent, and he has a great many strips that could be cut up into short lengths and used for the purpose indicated. He is in very necessitous circumstances, and if he could utilise his strips it would be a great help to him.—H. S. E.

[We print the inquiry of our correspondent in case any of our readers are desirous of procuring leather shreds, and at the same time assisting an afflicted man. These are the most durable of shreds for securing the branches of trees to walls where it is desired they shall remain as long as possible. For small annual growths of fruit trees cloth ligatures last quite long enough, but leather shreds can be used with advantage for the permanent branches of various kinds of trees that are grown against walls. The size of the shreds must obviously be cut according to the average size of the branches, the thinnest leather being cut into the smallest portions, commencing at half an inch wide and 4 inches to 6 inches long, increasing the widths slightly according to the greater lengths, which of course may exceed the dimensions indicated to any required extent. We will send any letters to our correspondent that may be forwarded to us on the subject, as we are sure he would not interest himself in an undeserving case. We apprehend it would be best to sell the shreds by weight.]

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (L. H.).—1, *Nicotiana affinis*; 2, *Deutzia gracilis*; 3, insufficient without flowers. (Constant Reader).—1, *Prunus Padus*; 2, *Arum italicum*; 3, *Vicia sepium*. (W. B.).—1, *Sedum album*; 2, *S. rupestre*; 3, *Saxifraga hypnoides*. (C. Williamson).—*Prunus Padus*, commonly called the Bird Cherry. (F. G.).—*Campanula glomerata*. The Carnations are by no means equal in merit to others of the same colours in commerce; still, the buff one is pretty and worth growing for your own garden; we mean it possesses no commercial value. (No Name).—The red tubular flower is *Mitraria coccinea*. (W. S.).—The Orchid is *Lycaste cruenta*. There is no certain remedy for the Cucumber disease (fruit form), and the only way in which a supply of fruit can be maintained is by constantly raising young plants and growing them in a very high temperature, so as to secure a fruit or two from each before the plants succumb. This, however, cannot be done if the disease is highly virulent, and Cucumber culture has then to be abandoned for a year or two in that position. (E. R., Forest Hill).—The grass is *Alopecurus agrestis*; the blue flower is *Veronica hederifolia*; the other is *Capsella Bursa-pastoris*. (W. H.).—The *Cattleya* is *C. intermedia*; the *Dendrobium* is *D. triadenium*. (W. W.).—1, *Cattleya intermedia*; 2, *Odontoglossum Roezli*; 3, *Dendrobium moschatum*; 4, Possibly a variety of *Epidendrum setigerum*, but there are over 400 species in this genus, many of them much alike in floral characters, and leaves or pseudo-bulbs are therefore useful in determining them; 5, *Dendrobium Freemanni*.

COVENT GARDEN MARKET.—JUNE 3RD.

BUSINESS better. Prices firmer, with a good supply of all classes of fruits and vegetables.

		s. d.		s. d.				s. d.		s. d.	
Apples	½ sieve	2	6	4	6	Oranges	100	4	0	to	7
Chestnuts	bushel	16	0	0	0	Peaches	per doz.	15	0	21	0
Cobs, Kent ..	per 100 lbs.	0	0	0	0	Pears, kitchen ..	dozen	1	0	3	0
Currants, Red ..	½ sieve	0	0	0	0	,, dessert	dozen	0	0	0	0
,, Black	½ sieve	0	0	0	0	Pine Apples English ..	lb.	2	0	3	0
Figs	dozen	4	0	6	0	Plums	½ sieve	0	0	0	0
Grapes	lb.	3	0	5	0	Strawberries	lb.	2	0	4	0
Lemons	case	10	0	15	0	St. Michael Pines ..	each	3	0	7	0

		s. d.		s. d.				s. d.		s. d.		
Artichokes	dozen	2	0	to	4	0	Lettuce	dozen	1	0	to	2
Asparagus	bundle	2	0	5	0	Mushrooms	punnet	0	0	1	4	
Beans, Kidney ..	100	1	0	0	0	Mustard and Cress ..	punnet	0	2	0	0	
Beet, Red	dozen	1	0	2	0	Onions	bunch	0	3	0	6	
Broccoli	bundle	0	9	1	0	Parsley	dozen bunches	2	0	3	0	
Brussels Sprouts ..	½ sieve	0	0	0	0	Parsnips	dozen	1	0	2	0	
Cabbage	dozen	0	0	1	0	Potatoes	cwt.	4	0	5	0	
Capsicums	100	1	6	2	0	,, Kidney	cwt.	4	0	5	0	
Carrots	bunch	0	3	0	4	Rhubarb	bundle	0	4	0	0	
Cauliflowers	dozen	2	0	3	0	Salsafy	bundle	1	0	0	0	
Celery	bundle	1	6	2	0	Scorzoneria	bundle	1	6	0	0	
Coleworts	doz. bunches	2	0	4	0	Seakale	per basket	1	0	0	0	
Cucumbers	each	0	3	0	6	Shallots	lb.	0	3	0	0	
Endive	dozen	1	0	2	0	Spinach	bushel	2	0	4	0	
Herbs	bunch	0	2	0	0	Tomatoes	lb.	0	0	0	0	
Leeks	bunch	0	3	0	4	Turnips	bunch	0	4	0	0	



DAIRY FARMING.

SPRING.

(Continued from page 452.)

A COWMAN should live close by his cows, and he should never be long absent from them when they are in the yards, and they should be seen two or three times daily when out upon the grass. Experience shows how necessary this close supervision is, for it is undoubtedly the teaching of experience that accidents occur among cows in many strange and unexpected ways, and we all know how easy it is to be wise afterwards. "If I had only thought about it!" is what most people have said—at any rate to themselves—after something has gone wrong. Let not, therefore, a word or two of caution about the most trivial matters be considered misplaced or uncalled for; we have all tried our "prentice hand," and all blundered more or less. When the cows were first let out of the yards this spring it was not into the large open pastures, but into a small meadow of only a few acres, well sheltered by trees, yet open to the south, and with an early strong growth of grass. We have several such meadows of from four to seven acres, all well supplied with water, and we find them most useful both for cows and calves. A lodge, large in proportion to the size of the meadow, closed with boards on three sides, and with fully two-thirds of the fourth side also boarded, a large opening being left for the cows—simply an opening without any doors; plenty of pure water, and a rich pasture, renders such enclosures invaluable for the care and comfort of the herd. The one used first this year is near the yards, and it was there that the new cows and heifers were introduced to the herd, a close watch being kept to prevent injury to the young cows, new introductions generally causing much excitement in the herd, which often continues for a day or two.

Cows are as equally sensitive to cold and damp as horses. Their actions show this plainly, a shower of rain causing them to run to any place of shelter, however bad, the hardy little Kerry cows being the only exception to this rule in our experience, and even they will eventually become more delicate from being reared in lodges and yards instead of the bleak slopes of Kerry. We might go farther, and assert that cows are more liable than horses to sustain harm from

exposure, from the fact of the habit of most cows to lie down to ruminate, which cannot be done without considerable risk of harm when the ground is cold and sodden with moisture. At first they are only left out upon the grass for two or three hours, the time being gradually extended as the days lengthen and the weather grows warmer; but they are not left out at night till summer is fully upon us, and even then they have access to a lodge. The backs of cows are examined closely before they leave the yard for warble maggots, which are either squeezed out or touched with mercurial ointment. There can be no doubt that these huge maggots must seriously affect a cow's health, and it is only by the destruction of the larvæ that we can hope to keep down the flies in summer, and at this season of the year they may easily be detected and destroyed through the circular opening in the skin above each maggot.

When cows are first into a strong fresh crop of grass they eat it greedily, and occasionally a case occurs in which the cow has so crammed itself that the rumen cannot act. Fermentation then sets in, gas is generated with such rapidity that the stomach is distended almost to bursting, and the cow is said to have hoove. It stands apart from the others with its head extended, breathing with difficulty, but not moaning at first. This, however, soon follows with increasing pain, and then comes the risk of inflammation and death. Taken in time, the remedy is simple enough, for we have only to give vent to the gas and there is immediate relief. This is done by making an opening into the left flank in cases of urgency with the point of a knife, and the insertion of a small wooden tube with a flange upon the outer end to prevent it from slipping into the cavity of the stomach. An old but safe authority tells us the safest place for this operation is the apex of an equilateral triangle described by a line along the vertebræ from the haunch bone to the last rib, and two other lines of equal length down the flank, the opening being made at the point of union of these two lines. We have found this in practice to be correct and quite safe to follow, but we only advise this somewhat rough-and-ready remedy for emergencies. If a veterinary surgeon can be had quickly he should certainly be called in, and he will probably use the stomach-pump to inject chloride of lime, and avoid the more obsolete plan of using the knife or a trocar. When the gas is removed the cow at once shows symptoms of relief, and it should have a dose of a pound of Epsom salts, half an ounce of powdered ginger, and an ounce of carraway powder, and for a short time afterwards daily doses of four ounces of Epsom salts, two of powdered gentian, and half an ounce of powdered ginger, with a bran mash. With careful feeding the cow will soon recover, and if it is only of ordinary value it should be dried of milk, fattened, and sold to the butcher, for the stomach is so much weakened by hoove that there is risk of subsequent attacks.

Red-water has always given us more trouble among the cows in June than in any other month of the year. It is generally accompanied by costiveness, but we once had a heifer suffering from red-water and diarrhœa, and the remedy used for the diarrhœa caused the red-water to disappear with it in about twelve hours. Costiveness is, however, usually present, and a dose of a pound of Epsom salts is given at once, and some red-water drenches procured from the veterinary surgeon, some of which dire necessity compels us to keep by us at this season of the year. With them we always feel safe, care being taken to give them so slowly that the liquor only trickles gently down the animal's throat, and it is very seldom that the presence of a surgeon is found necessary. As to the cause of this troublesome ailment we have nothing more particular to say than that we have reason to suppose it arises from the eating of unwholesome herbage peculiar to certain pastures, for we have never had a case among any of the cows when kept altogether upon our best pastures containing very little growth besides selected Grasses of known excellence and Clovers.

(To be continued.)

WORK ON THE HOME FARM.

Frequent showers have brought a strong growth of weeds among Potatoes, Carrots, Parsnips, and Mangolds. Hoeing by hand must be pushed on to keep the crop from being smothered by weeds, and the horse hoes brought into use as soon as possible. Apart from weed growth the weather is favourable for transplanting Kohl, Cabbage, Thousand-headed Kale, and Mangolds where necessary, and so we may reasonably hope to have a full plant and none of the bare patches that were so prevalent last year. Hops have suffered from the cold nights, but the change to warm showery weather will soon bring the growth up the poles, and the horse hoes must be kept going among them. Where Charlock makes its appearance in moderate quantities among any of the crops too forward for any more hoeing, let every plant be pulled up by hand if it can possibly be done without harm to the crop among which it is growing. If this were done we should not see whole acres of this pest as we so frequently do now. Once get Charlock established in the soil and it will require several years to get rid of it. The best plan is to sow a few acres of land infested with it with White Mustard year by year, ploughing in Charlock and Mustard as soon as flowers appear, and sowing Mustard again at once. If this is repeated, say three times in a single season, most of the Charlock seed near the surface will germinate, and the land will be well stored with nutriment. Many a field of corn has shown recently by the yellow hue of the plant how badly drainage is required. Let all such fields be entered in a note book for drains next autumn, and do not wait till then before coming to a decision about a matter upon which so much depends. Now is the time to see where drains are wanted; without them it is not worth while to buy manure, for land that is waterlogged is not worth manure till the water is drawn from it and drains are left in perfect working order. Drain the land, use genuine manures for it, grow your own cattle food, and keep down those heavy bills for cake and corn, which tend more than anything else to cripple farmers, and to put all their profits into the pockets of the middleman. Frequently are we asked to inspect farms and to advise gentlemen as to a more profitable method of culture and management. Gladly do we do so when we have reason to hope that our advice will be followed, for we have several farms in hand, and know full well how difficult it is to induce those who manage them to follow any but the beaten track of their forefathers. A well-managed farm ought now to afford a full supply of green food for the horses. We have some horses on Trefoil, some on Clover, and others upon Grass, where they are turned as they come in from work. When they have eaten enough they are taken to the stable for the night, and given either Lucerne or Rye Grass. With plenty of green food horses require no corn unless they are put to exceptionally hard work. See that Thistles, Nettles, Docks, and Brambles are kept under upon pastures now.

OUR LETTER BOX.

Castor Oil for Calves, &c. (*A Constant Reader*).—Your query about the quantity of castor oil which should be given to calves has been answered long ago. We repeat that the dose for a calf is 2 to 4 ozs., but you must be guided by the size and strength of the sick animal. For example, we had this spring a Jersey calf with a bad attack of diarrhœa. Now this calf was so small and delicate that the dose was reduced to 1 oz. of castor oil and twenty drops of laudanum, and we may add that a single dose was sufficient to arrest the foul purging, and the calf was soon restored to perfect health. It is no part of the reviewer's work to notice the prices of books. It is our province to give the title of a book, the place of publication, and our estimate of its contents as briefly as is compatible with the bringing of a sufficiently clear idea of its value to the notice of our readers. It is for the publisher to advertise the work. We certainly may claim to have done our part, and it is conformable to the general practice.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	9 A.M.					IN THE DAY.				Rain	
	Barometer at 32° and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass		
1885.											
May.											
Sunday	24	29.953	54.4	47.4	W.	49.1	63.6	43.2	106.1	38.0	—
Monday	25	30.058	52.9	47.7	S.	50.1	54.8	41.7	78.9	36.3	0.132
Tuesday	26	29.964	57.2	53.3	W.	50.3	64.4	47.3	103.5	47.3	—
Wednesday ..	27	30.005	56.9	52.4	S.W.	51.6	69.4	52.4	114.4	49.2	—
Thursday	28	29.901	66.6	59.3	S.W.	53.5	73.8	53.1	117.6	46.8	0.292
Friday	29	29.950	57.2	52.9	S.E.	55.4	68.4	52.9	115.4	51.8	—
Saturday	30	30.080	57.0	51.4	S.W.	54.8	65.6	47.2	119.3	41.7	0.013
		29.987	57.5	52.1		52.1	65.7	48.3	107.9	44.4	0.437

REMARKS.

- 24th.—Fine, and at times bright.
- 25th.—Fair early, afterwards rainy and cold.
- 26th.—Cloudy morning, fair afternoon, then fine.
- 27th.—Fine and bright.
- 28th.—Fine, bright, and warm.
- 29th.—Heavy rain early; fine and bright after 9 A.M.
- 30th.—Fine morning; clear afternoon with slight showers; then fine.

Much warmer and finer than the previous week, but the temperature scarcely up to the average; even Thursday, which by some persons was considered hot, was so only relatively, for the temperature on that day (73.8°), though the highest during the month, is the lowest maximum for May for several years. In 1884 the maximum for May was 81.3° on the 24th, and there were six days with higher readings than any in 1885. The average maximum for 1885 was 6.6° lower than in 1884.—G. J. SYMONS.



COMING EVENTS

11	TH	Royal Society at 4.30 P.M.; South Essex Show, Leyton.
12	F	
13	S	
14	SUN	SECOND SUNDAY AFTER TRINITY.
15	M	
16	TU	
17	W	York Gala (three days). Royal Botanic Society's Summer Show.

FLOWERING SHRUBS.

PERHAPS the most charming of all spring-flowering shrubs is the well-known Spanish Broom (*Spartium junceum*). Its long fringed branches of graceful arching habit when covered, as they are this year, in late May and early June, are lovely. Upon banks it has an exceedingly good appearance, and thrives in almost any soil, flowering profusely. It is an admirable rock plant, its elegant habit giving it a peculiar fitness for such position, and in the front of shrubberies is excellent. *Genista procumbens*, as its name implies, is of dwarf, prostrate, yet compact growth, and in May is laden with its golden yellow flowers, which on slopes, or rockwork, or other position where perfect drainage is secured it is quite a gem, and certainly ought to find a place in every garden, especially in those where the soil is light, or at least well drained, as it certainly dislikes wet.

Genista præcox is, next to the *Genista* first named, the finest of all hardy spring shrubs, flowering as it does every year in the greatest profusion, its slender shoots drooping gracefully under its load of pale yellow or sulphur flowers, and is best seen to advantage on a sloping bank, where we have it in association with the preceding, and is very effective along with Yellow and White Broom towering up at the back, loaded as they are with their golden and silvery white blossoms respectively. Like all the Brooms it likes a light soil and well drained. In wet soils it does not thrive, but a sunny position on rockwork will be found to suit it admirably; indeed it must be considered one of the best rock shrubs, as even when not in flower it is very graceful in appearance.

Genista hispanica, or Spanish *Genista*, is a pretty, dwarf, very compact growing bush, not more than a foot high, quite charming in the front of shrubberies; it is a mass of golden flowers in late May or early June, and in prominent positions is highly ornamental, as out of bloom it has a very elegant appearance. Well-drained soil is necessary to succeed with it, it being impatient of a wet soil.

Berberis stenophylla is another charming plant for a sloping bank or other position where the soil is well drained and the situation sunny. The deep golden, almost orange, blossoms on the slender arching branches have a lovely effect, and it blooms splendidly when once it becomes established, following close after *B. Darwini*, being a hybrid between that and *B. dulcis*. It deserves to be more commonly met with in gardens than we find it at present. In wet soils it does not do well, but we have seen it thriving admirably as a wall plant where the soil was wet and the climate cold. A well-drained soil and sheltered position is, however, best suited to it.

Coronilla Emerus, or Scorpion Senna, is another very free-flowering shrub. Its elegant growth and profusion of yellow blossoms render it very desirable for shrubberies, attaining to a height of about 4 feet, and during May is a conspicuous object. Like all those previously named it requires a light

well-drained soil, and then it thrives well. In heavy wet soils its growths from not ripening well are liable to be cut by severe frosts.

Daphne Fioniana is a pretty evergreen of dwarf habit, and is well worth a place in every garden, not only as a free-flowering plant with lilac-purple flowers, but for its delicious fragrance. It does well in light soil, and though generally considered to require peat, it thrives here in light soil overlying gravel of the oolite formation, in which it grows freely and flowers abundantly. It also does well planted at the foot of rockwork.

Cytisus albus, or White Portugal Broom, is also very fine, having whipcord-like growths arching beautifully under its load of pure white flowers, and is in light well-drained soils quite hardy, being particularly fine for sunny slopes and rockwork. It does not succeed well in a wet heavy soil. The Cream-coloured Broom (*Cytisus pallidus*) is also very fine, flowering during late May or early June, and is equally eligible for rockwork or the front of borders in well-drained soil. The two last associate well with the plants previously mentioned on sloping banks, having a contour in tasty arrangement very different from the stiff formality presented by banks of pegged Laurel or clothed with Mahonia, being more natural and pleasing.

Spiræa ulmifolia bears large corymbs of pure white flowers, and is very effective just now in early June, and not being more than a yard high is suitable for front rows in shrubbery borders. It succeeds in almost any soil, but does best in a good rich loam, moist, but well drained, or one through which the water can percolate freely. *S. Van Houttei* also has white flowers in corymbs, and being of moderate growth and very free-flowering is suitable for the front of shrubbery borders. *S. Thunbergi* produces its flowers along the slender shoots, and when well flowered is very graceful and suitable for positions that preclude larger-growing kinds, being generally about 2 to 3 feet high. *S. Nobleana* has pink flowers in corymbs, and is also of moderate growth, flowering in early summer. But the most graceful of all the spring-flowering *Spiræas* is *S. prunifolia* fl.-pl., its slender growth pendant with its profusion of pure white double flowers rendering it quite charming in second or third rows in borders. In good soil it attains to a height of about 5 feet, flowering in April. *S. Reevesi* fl.-pl. flowers a little later, and is very beautiful, and does not exceed 3 feet in height. *S. opulæfolia lutea* may be mentioned as being very effective from its bright yellow foliage when first put forth, which brighten up a shrubbery immensely.

Exochorda (*Spiræa*) *grandiflora* is a very fine shrub indeed, its pure white flowers being produced in long spikes, or racemes along the branches, and in a good specimen is very beautiful. It is not very hardy—at least in damp soils it makes late growths, which are liable to be cut by frosts in winter. In our soil—viz., light loam over gravel—it does capitally, and certainly is deserving of place in every shrubbery. It flowers early in June onwards. During April *Pyrus spectabilis floribunda* was very beautiful by its profusion of showy blossoms of a rosy pink, and the plants being worked low they are no more than a yard high, and in shrubbery borders there is no more beautiful early-flowering tree.

Weigelas are beautiful late-spring or early summer flowering shrubs that are not grown so extensively as they deserve to be. They have a beautiful effect when clothed with their white, rose, pink, and red almost *Pentstemon*-like flowers, which are borne profusely on ripened wood. Very rich soil and shaded positions should be avoided, or the growth will be too luxuriant; hard, sturdy, or almost stubby growths being invariably the most floriferous, and these can only be produced under the full influence of sun and air, and with the roots of the plants established in firm and moderately fertile soil.

In late May the best plant of the shrubbery was the new

Red Lilac (*Syringa rubra insignis*), its large heads of bloom and bright colour rendering it very conspicuous. It is a very fine Lilac, and is well worth adding to every collection of hardy plants.—G. ABBEY.

IN THE GARDEN.

BERBERIS STENOPHYLLA.—This is one of the finest hardy shrubs I am acquainted with; graceful in habit, extremely free-flowering, it has an appearance quite its own. The elegant branchlets are thickly crowded with the pendant orange-yellow blossoms—the rendezvous of a myriad of bees. I am quite sure we see far too few specimens of this shrub in our gardens. For the colder localities it is more reliable than *B. Darwini*, as the latter is not so happy in such places as in the south—the neighbourhood of London. I have my mind now upon the beautiful specimens of it at Kew—how well they blossom there! But *B. stenophylla* should not be a stranger in gardens. The white Broom and it look well together in good bold masses. The dotting system of shrub-planting must, to a great extent, die out in the future, as a much better effect is to be had by planting blocks or masses in proportion to the surroundings.

THE SIBERIAN CRAB.—From my garden I can see a fine standard of this amongst some other trees, and how effective it is! I was never so much impressed with its extreme usefulness as a landscape tree of the first merit; the bright warm-coloured flowers in such profusion are indeed a treat at this season, and could be largely employed in effective tree and shrub planting with the best possible results, indeed a brighter effect can hardly be produced by any other hardy tree.

ST. BRUNO'S LILY (*Anthericum Liliastrum*).—One of the best border plants now coming into beauty; the pretty tufts of glaucous grass-like foliage surrounding the erect spikes of pure white Lily-like flowers are much to be desired in all gardens. I take it for granted that all who grow hardy flowers already possess it. There is also a form called major, but it is not always much larger than the type if the latter is liberally treated; this means according to my experience, planting it in rich, sandy, well-manured soil; the strong stout buds we should see are not developed without a good supply of food. A native of the hills of southern and middle Europe, it is perfectly hardy, and being reasonable in price, there is nothing to prevent its being very generally grown.

A very different species is *A. aloides*. A native, I believe, of Algeria, and not hardy, it requires a cool house or warm frame during even mild winters, but it is one of those curious plants we like to keep. As its name implies it resembles an Aloe very closely; the leaves are fleshy and very pale green in a sparse rosette; the flower spikes are axillary and slender, with several buff or orange-yellow flowers, each about half an inch across, not at all showy, but extremely interesting on account of the bottle-brush-like filaments, the anthers being slightly raised above them. The plants grow freely enough in a pot if good drainage is afforded and light sandy soil is employed as potting compost, but it should be carefully watered during winter, as the fleshy leaves are deciduous.

THE AMETHYST HYACINTH (*Hyacinthus amethystinus*).—A gem among the bulbous plants now in flower, following *H. orientalis*, and appearing with the Wood Hyacinths, for one of which it might easily be mistaken; but look at it carefully, and you will find it a little aristocrat, refined and distinct. I would not like to be without it and its pure white form for my garden. The latter is truly a little beauty, precisely like the type, with the exception of the colour of the sweet blossoms. The typical form produces spikes of flowers of a clear amethystine blue, several of them close together at the top of the spike; the perianth is cylindrical, with small slightly reflexed segments. It is a native of southern Europe, and has been known in British gardens for over a century, yet it is still comparatively rare, but not devoid of beauty. In 1825 Sweet gave a figure of it in his "British Flower Garden" pl. 135, which was taken from plants that flowered in the Chelsea Botanic Gardens. Sweet is quite right when he says a light sandy soil is congenial to it, with a dry bottom, for if the bulbs get sodden with too much moisture they will be very liable to rot. He mentions nothing about the white variety, so I presume he did not know of its existence, indeed it appears to be extremely scarce; therefore it behoves me to take care of a nice tuft of eight bulbs.

TULIPA RETROFLEXA.—When penning a few notes upon Tulips quite recently for the Journal this very handsome species was unintentionally omitted, but this evening (May 29th) when on my usual round, its beauty struck me more than ever, to say nothing of its lasting characters, for the blossoms have been out

for a long time. It vies with *T. Greigii*, and forms a most desirable companion to that species, but is much taller; the stems are quite 15 or 18 inches high, crowned with large canary-yellow flowers, the upper third of the perianth divisions being reflexed, which gives the flowers a very unique and pretty appearance as they are gently waved amidst a groundwork of *Anemone fulgens*.

ROSE CUTTINGS.—It was not until the early days of January that these were inserted, having been cut some weeks previously and simply heeled in. They have done really well, a most satisfactory per-centage have rooted and are making sturdy little bushes. The position is a warm and open one, and they were inserted in small ridges of silver sand and wood ashes mixed in equal proportions. As we are experiencing very dry weather they have an occasional soaking, which evidently does great good. I have only inserted cuttings of H.P.'s.

AUBRIETIAS.—These are amongst the brightest of spring-flowering plants. Extremely free-flowering, and in most places free growing, they commend themselves to all gardeners. When we think of them the prevailing colour is bluish-purple, the type of which is *A. purpurea*, which is about the only true species, I suppose; but as a garden flower it is very inferior to others—*Hendersoni*, *Campbelli*, and *violacea* for example. These are much more attractive, the flowers being larger, richer in colour, and more freely produced. Some say *Hendersoni* and *Campbelli* are synonymous. I will not pretend to decide that, but all gardens should have one of them; and *violacea*, which is certainly distinct from either of them, producing large flowers of a rich violet-purple colour. It is a hybrid raised by Herr Max Leichtlin of Baden, and this leads me to refer to another seedling which I believe he is now distributing, or I am not quite certain whether the stock is not sold to one of our enterprising hardy plant cultivators. A friend who has seen it informs me that the colour is rich crimson, "There is no mistake in it," says this kind and certainly not exaggerating friend, so I trust his verdict is correct, and that we have at last got a crimson *Aubrietia*; another advance may give us a scarlet one, which would be an acquisition indeed.

DAPHNE RUPESTRIS is such a little gem among shrubs that I cannot refrain from mentioning it here. So dwarf is it that flowers and foliage do not rise more than 2 inches from the soil, although the plant has been on the rockery for over four years. It spreads a little, but the most that can be said is that it grows very slow on its own roots, but the little clusters of sweet-smelling flowers look extremely pretty with the narrow dark green foliage. It grows rather more rapidly when grafted upon *D. Mezereum*, and flowers more freely. A dwarf standard of it is most interesting and very pretty when in flower. A very scarce plant, a high figure is asked for it by those possessing a stock—Messrs. James Backhouse & Sons of York, for instance, which is no doubt due to the slow way in which it can be increased.

THE DWARF ECRYSIMUM (*E. pumilum*), is such a gem, that no alpine garden should be without it. The foliage is in dense little tufts, from which small racemes of flowers grow up 2 inches or so high, sometimes not so much, comparatively large for such a diminutive plant, rich lemon yellow; indeed it resembles a miniature Wallflower if only the flowers are considered. It thrives well in a sunny, well-drained crevice of the rockery, and nothing is brighter than a small colony of it at this season.

MARSHALL'S AND THE ALPINE WALLFLOWERS.—These are known under the technical names of *Cheiranthus Marshalli* and *C. alpinus*; the former a hybrid, and at most a biennial; the latter a species, and rather more enduring, but capricious. There is no plan so good as striking a fresh batch of cuttings every season, so as to secure strong young plants for blooming every spring. They are gems, the first a rich orange; and *alpinus*, clear lemon-yellow, very dwarf and free, forming a very bright display, and can scarcely be better appreciated than when growing side by side, or even mixed together in thick colonies on a ledge of rich light soil.—T.

WHY GRAPES CRACK.

UNDER this heading Mr. Iggulden has been rather severe on me on page 455, and he must not be surprised if I am a little severe on him in my reply; indeed, judging by the tread-on-the-tail-of-my-coat tone of his letter, I suspect he would be very much disappointed if I were to answer him in "bated breath and whispered humbleness." I shall do nothing of the kind, but shall knock down the premisses on which he has erected his case, and his "arguments" will then necessarily fall like a house of cards.

I do not think Mr. Iggulden would wilfully misquote or set up a theory of his own and call it mine with the object of showing its falsity and glorifying himself at my expense. I have a better opinion of him than

that. But as he has done this even inadvertently, and passed a not very flattering judgment on me, I am bound to examine his credentials to ascertain how far he is competent to give a public verdict that shall have any material weight.

I have to remark first that your correspondent has wasted some time by basing the greater part of what he calls his argument on so-called "facts" which have no existence, and I must spend some more time in putting him right. He seems great in "facts," and prides himself on his "practice;" but I will endeavour to show that his main "facts" are mere fancies, and that his "practice" is not immeasurably greater than mine.

1. I have never stated that the transmission of moisture from the atmosphere through the skins of fruit is the "sole" cause of cracking and bursting; but, on the contrary, have said plainly that Grapes and Gooseberries are occasionally ruptured by an excess of moisture imbibed by the roots. I have said the former is the "main" cause, which is a very different matter; and I do not hesitate to say, judging by the material he has placed before us, that it will take a better man "practically and scientifically" than even Mr. Iggulden is to prove the contrary.

2. I have never said a word against the operation of passing a gimlet through a Vine lateral for arresting the sap, but have admitted in the clearest terms the value of Mr. Thomson's experience; indeed, to ignore the experience of an older cultivator than myself, and with such a splendid record as he has, would be to say the least, perversely.

3. I have not only never uttered a sentence against the method of ventilation outlined on the page above quoted, but, on the contrary, have practised it, I think, much longer than your correspondent has; and I have no recollection of the crop of any Vine in my charge (except for purposes of experiment) ever having been spoiled by the splitting of the fruit. If that is not "practical" enough I should like to know what is.

Having shown that your correspondent has reared his elaborate critique on a false foundation (and, this removed, the fabric falls), let me ask him, and others who may be disposed to support him, to make sure of their ground before uttering their condemnation, or they will instead of weakening me weaken themselves by spending their intellectual strength vainly; and to combat me on the above lines will be to engage in the not particularly "practical and scientific," but rather Quixotic occupation of fighting windmills.

Now briefly to the scientific aspect of the question. I am sorry my knowledge of chemistry is so limited; that I know to be a misfortune, for which no really competent man reproaches. He corrects; it is only those whose shortcomings are manifest that have sufficient confidence to denounce, which is so much easier to do than to comprehend. Having regard, then, to all the elements in this case I do not dissent from Mr. Iggulden's verdict on myself; but when he twits professors in science with proving their views to "demonstration," he passes a curious verdict on himself, because the very fact of the demonstration proves the truth. If scientifically "demonstrated" a matter is settled beyond argument, so that my critic evidently does not understand the subject he denounces, but does not appear to adequately comprehend the meaning of his own words. In return for his modest estimate of my competency, and that of really scientific men, I respectfully ask him to consult a dictionary.

After showing that your correspondent has "no case" (for he cannot place his finger on one sentence I have written to disprove my three statements on which he has founded his remarks), I might not improperly leave the matter, but will not do so, being rather disposed to allow his arguments the greatest possible force that can legitimately attach to them. I will examine a few of the "points" in the great impeachment, and see what is in them.

First, I am wrong for being "too readily convinced" of, I suppose, the existence of the principle of osmosis. How does my critic know how long the subject has been under my consideration? In another part of his communication he thinks perhaps I know something about the neighbourhood of Manchester being moist. Perhaps I do, seeing that I had charge of ranges of vineries for three years within three miles of that city before he was out of his long clothes, and I never before nor since saw so many split Melons as there in pits heated by fermenting manure and the roots of the plants in dry soil under glass; but in the hot-water-heated vineries, where an excess of moisture could be prevented, we had no split Grapes, though the roots of the Vines were outside, and no means were adopted to keep the rain off the borders. The head gardener there I used to think, in my ignorance, was too scientific, and he it was who first taught me, what subsequent experience has confirmed, that moisture does pass from the atmosphere through the skins of fruit and causes splitting. Therefore as I have had this subject in my mind for as many years as it has troubled Mr. Iggulden's for an equal number of weeks, it seems peculiarly fitting that he should decide I have been "too readily convinced."

Next he starts his "matter of fact" assertion that the "primary cause of Grapes splitting is faulty ventilation," and in the strangest of strange ways adduces an example of Lady Downe's alone splitting, while at least "four other Vines were growing in the same house and border," but only that one got too dry at the roots, was then too heavily watered, and hence the fruit split. Confessedly the "primary cause" of the evil in this case was not "faulty ventilation," and I have seen similar examples.

I will, however, look a little more closely into what Mr. Iggulden describes as "his" theory of Grapes splitting. The "faulty ventilation" evil has been pointed out in the Journal over and over again for years past, and the very fact of the existence of a fault, either in the character of a structure or the action of a man, shows conclusively that it is contributory and altogether subsidiary to the active cause of the unfortunate result in question. Ventilation is an important lever guiding the action of that

which is the true cause of the evil—excessive moisture in the fruit. The question is, How does it get there?

All the gardeners who supply Mr. Iggulden with what he calls "his" arguments without a doubt act correctly, and so do others who succeed in growing and finishing Grapes as well as they do. They manage the lever that controls the moisture intelligently, and hence do not call into action the principle which is the cause of the ruin of so much fruit. Your correspondent may just as well say that an inebriate suffers from the pump-handle disease, because the said handle was the lever for drawing the water that made the beer that had the "effect," as to say that "faulty ventilation" is the "primary" cause of fruit splitting. The "cause" is an excess of moisture, mainly from the atmosphere, but occasionally from the earth. Think a little more deeply, my friend, before lecturing philosophers; lecture me to your heart's content, but never forget that parrots can talk.

"Are there any 'practical' men who believe it possible that Grapes or any kind of fruit can absorb sufficient moisture through their skins to cause them to burst?" asks your wondering correspondent. If there are none there ought to be, and will be. Even Mr. Iggulden will have to be converted. It is no use his setting his back up and stubbornly refusing to harbour such (to him) absurd notions. Facts will force their way even through his tough exterior, and a few years hence he will wonder why he was so blind in the days of his youth.

It is my turn to wonder now. I wonder how much money has been lost by purchasers of Cherry orchards through the unfortunate, and always dreaded, occurrence of a series of drizzling days keeping the ripening fruit constantly wet, without any rain to penetrate the pastures and reach the roots of the trees. The loss has often been ruinous by practically all the exposed fruit cracking, only a little remaining sound, and that little invariably sheltered from the wet by the overhanging branches. I want an explanation of that fact. If the splitting results from an excess of moisture from the roots, why does this sheltered fruit escape? The Manchester tent, says Mr. Iggulden, arrested evaporation, hence Mr. McIndoe's Grapes split; but in the Cherry orchards, where the foliage overhangs the fruit, and necessarily has a vapour-arresting effect, the fruit is sound, that above with nothing over it but the sky alone cracking. How is that?

Again, how is it that ripe Cherries, Plums, and Gooseberries which are often obliged to be "hampers" in a wet state have to be sold quickly at "any price" for the very simple, yet very "practical" reason, if they are not sold quickly half the fruit will be spoiled by splitting. What is the cause of this? Surely it is not moisture conveyed through the "ordinary channels"—the roots and branches, when these are in Kent, while the splitting may occur, and has occurred, in London, Leeds, or Edinburgh. After Mr. Thomson suggested that the splitting of Mr. McIndoe's Grapes at Manchester three days after the bunches were cut from the Vines in Yorkshire, was caused by expansion of the fluids owing to the heat of the tent, Mr. Iggulden says, "This ought not to be a mystery to anyone." Since your correspondent is so expert at solving problems when another has prepared the way, I will ask him to explain how it is that so much soft fruit bursts in the night when packed wet in the day, even when taken out of hampers and spread on trays. The temperature is lower, not higher than in the daytime, and there cannot therefore be an expansion of fluids by increased heat. We must fall back on evaporation. The moisture cannot be readily dissipated under a roof. True. But if the moisture on the outside of fruit remains there, how can it cause distension from the inside and rupture the cuticle? I want an answer to that question. I say the moisture that is not dissipated passes through the skin of the fruit, and I shall be very much surprised if there is a "practical or scientific" man on the face of the earth who can prove the contrary, even not excepting Mr. Iggulden.

I note that Mr. Thomson does not deny the existence of the principle of osmosis. It is convenient for Mr. Iggulden to ignore that, but he seizes on the inability of that gentleman to account for its action on the Duke of Buccleuch Grape alone. Mr. Iggulden settles the "difficulty" by plainly stating that moisture in the Manchester Show was "too much" for the Duke, and hence the splitting. He thus recognises the differing nature of the skins of Grapes, which explains the whole matter; and, as your correspondent is fond of seeking analogies in the animal world, I will ask him why the skins of fruit should not vary as well and as much as the skins of animals, including the "higher order," for that his must be different from most others I will either prove from his own data, or show that his argument on that matter is fallacious.

In conceding that Mr. McIndoe's Grapes split through an excess of moisture that could not escape from the fruit tent at Manchester, Mr. Iggulden proves all I have claimed, but does not appear to know it. He is quite welcome to all the strength he can gather from the skin-softening notion; but in connection with it he is driven to rely on the expansion of the fluids of the fruit by heat, causing a distension that the cuticle could not bear. Now to begin with, the heat of the tent was not by any means so great on that day as is implied by his suggestion. I will not, however, dwell on that, but will ask him to cut a bunch of the Duke, let the skin "soften" as much as he likes, then place the bunch in a temperature 20° higher than has ever been recorded at Manchester, the air being dry, and see if the expansion of the fluid ruptures the fruit. It will not do so; but place a similar bunch in a very moist atmosphere, 10° lower than the temperature was that day, or where there can be no expansion, and the skin will split. The reference to the Duke alone was because this was the only Grape in question at the Show mentioned, but the result is the same with other varieties, the injury being more or less rapid according to the nature of their skin.

Mr. Iggulden will have to advance something more than such vague generalities as are contained in his letter before his so-called "facts" are difficult to controvert. It is not any facts that I will question, but erroneous deductions from them. The cracking of nearly ripe fruit rarely occurs in dry weather, because the evaporation is rapid, says Mr. Iggulden. Precisely so, and the hotter it is, and according to his logic, the greater the expansion of fluids, the less liable it is to crack, for it will shrivel. The moisture passes from it then; and it would be curious indeed if moisture that passes from the inside outwards would not also pass from the outside inwards under suitable conditions, such as a constantly wet surface or surrounding atmosphere. It not only passes through the cuticles of fruit of all kinds from the exterior, but also through the seeds, branches, and leaves of plants, all of which are very sensibly and often beneficially distended thereby. If it were not so, how are the many thousands of dry rootless Orchids that arrive in this country from abroad "plumped" and established?

Then your correspondent goes on to say, when evaporation ceases by the intervention of showery weather the excess of sap partly finds its way to the fruit and partly back to the roots, the former becoming gorged. I have never said that an extra supply of water does not affect the fruit that it reaches through the ordinary channels, because I know it does; but I say in addition to that the fruit absorbs moisture, and numbers of Grapes, and other soft kinds, split through that cause alone. Surely the "excess" of sap resulting from diminished evaporation from the Vines at Hutton Hall did not "find its way" into and gorge the Grapes that had been cut some days at Manchester. No, the moisture in the tent did the mischief, this simply passing through their skins to their destruction; and all that Mr. Iggulden has said in contravention is the delightfully lucid explanation that the "state of affairs was too much for the Duke," because, forsooth, its skin was softened, which predisposed it to crack.

He seems half afraid this "skin-softening may not be found tenable." Why, then, does he build on such a doubtful foundation? But weak as it is, it is the strongest point in his argument. In elucidation he passes to himself, and we find him making the astounding suggestion that a humid atmosphere affects the skin of individuals, predisposing it to crack. Those who suffer from chapped hands know that the exact reverse is the case, and they resort to softening remedies accordingly. The natural inference from this is that my critic is either different from other persons or there is a crack in his logic.

There have been no worse examples of Grapes splitting than when the roots of Madresfield Court, the Frontignans, and other delicate-skinned Grapes have been much too dry and the leaves flagging in consequence. The prevention of the evil is to be found in a well-conducted method of ventilation, and Mr. Iggulden's remarks on that subject go a long way towards compensating for the most illogical literary production I have ever seen placed over his name. He is no doubt a first-rate "practical" gardener, but more practice of another kind is needed before he can hit off the "fads" of pretentious scientists with the neatness of his late neighbour and really "scientific and practical" cultivator, Mr. William Taylor; at least, that is the opinion of—A THINKER.

P.S.—Let no reader fear that Mr. Iggulden will be "hurt" by anything I have said; he will enjoy it, as I have enjoyed his hard "hits." I have another good shot in my locker, and a reserve force behind that, which I consider much more weighty than anything that has been said in this discussion.—A. T.

IN reply to Mr. Henderson's remarks on the above subject, your correspondent, "Thinker," does not exhibit his usual acumen when he illustrates the supposed action of endosmose by the circumstance that fruit, foliage, and Cucumbers remain longer fresh—unfaded, so to speak—if immersed in water, though their cut stems may not be so immersed, than they would do if exposed to the air. I grant this at once, and add that they remain longer fresh immersed than they would with their cut stems in water if they were themselves exposed to the air, but I see a different cause that may account for this to that to which "Thinker" attributes it—not to the action of endosmose, though I do not deny its infinitesimal action, but to the stoppage of the action of exosmosis, or perspiration more strictly speaking. The action of the water prevents the dissipation of the natural sap, and is so far negative. In the case of foliage partially desiccated the case would be to some extent different there; there would be empty cells into which, by capillary attraction, aided by gravitation, water would enter, but such are excluded by the necessities of the case in point.

This is one of the many instances where negative action is mistaken for positive, and vitiates the whole argument. Given foliage full of sap, immerse it in water, and though no more sap may be able to enter none will escape. Result, the foliage will keep plump till decay sets in. As an argument to prove that Grapes already full of sap will from a much drier medium than their own body—the air of a well-ventilated vinery—absorb more sap and split through such action alone is to my mind a perfectly untenable theory.—W. THOMSON.

IN reply to "A Thinker's" remarks on the above subject on page 458, I wish to tell him that I have proved years ago that Cucumbers with their side in water, but the stalk out of it, will wither much sooner than others with their stalks only immersed; but to be entirely immersed in water with stalk protruding and not to wither does not prove that they absorb water through the skin, as no evaporation can take place under such circumstances. Fern fronds will undoubtedly absorb water if immersed in water, even if the stems are out of it. "A Thinker" may have observed the interesting phenomenon of Ferns being able to breathe

through their fronds, and also absorb moisture from the atmosphere, a fact which I have never heard of in the case of the fruit of the Vine, or Cucumbers either.

I have not tried the dipping system that enables Grapes to imbibe too much water for the resistance of the skin. Will "A Thinker" kindly tell us how long he leaves the Grapes in the water, and whether the skins crack in the water or when exposed to atmospheric influences after immersion? and also the temperature of the water he uses? as the water if sufficiently hot would cause cracking by their being scalded. If he uses water at a temperature of, say, from 50° to 70° Fahr., sealing up the cut end of the branch carrying the bunch of Grapes, or both ends if cut, so that no air or moisture can enter that way, and then immerse the bunch for as many minutes as he may think necessary for his purpose, and then find that the skins crack, he will have some grounds for his assertion, "that moisture passing through the skins of fruit has caused ten times more injury than has yet been generally admitted."

I may mention, in conclusion, that I have tried a few experiments on Grapes before now, one of which was to see if Grapes which had shrivelled by hanging in the fruit-room during winter and early spring could be plumped up again in more heat. I had a bottle filled with water at a temperature of 75°, into which I put the end of the branch carrying the bunch of shrivelled Grapes, and placed it in a stove at 68° or 70°, and found in the course of a few days that the berries had swelled out considerably, not, in my opinion, by absorbing the water through their skins, but caused by the influence of the higher temperature, enabling the inert branch to resume, to a certain extent, its former functions.—HUGH HENDERSON.

As the author of the remarks that have led to an interesting discussion upon the important question of Grapes and other fruits splitting, I beg a small space for a few notes made upon the remarks of my various critics. My esteemed friend, Mr. Thomson, first claims attention. I regret to observe that I have failed to convince him that splitting is mainly, if not wholly, caused by atmospheric influences, or as Mr. Iggulden puts it, "faulty ventilation," which, I presume, means where the ventilators are kept closer than is good for the well-being of the Grapes, and the atmosphere, being heavily charged with vapour, swiftly penetrates the thin porous skin of some varieties (notably the Duke of Buccleuch), and acting upon the tissues or fluids therein contained, causes an expansion of the same, and the skin being non-elastic soon gives way; hence the dry aperture so familiar to Grape-growers. Now, if splitting is caused by an extraordinary rush of sap sent up from the roots in such a way that it is not possible for the skin of the berries to contain the same, surely at least one drop of this sap will be found to ooze out of the opening, but such is not the case; on the contrary, upon examination it will be found that the moment the berries split the juices are seen to be congealed and dry, showing no trace whatever that an extraordinary quantity of crude sap had been suddenly sent into them.

Mr. Thomson, page 402, attributes the vigorous growing and rooting qualities of the Duke and Golden Champion as one of the causes of splitting, but I think no one knows better than he that of all Grapes in cultivation none is more liable to split than the weak spindly growing Chasselas Musqué. So far as my experience goes it makes but little difference whether the Duke or Golden Champion are growing upon their own roots or grafted upon another stock, their liability to split is precisely the same. Mr. Thomson further adds, "In the light, rather poor dry soil and climate of Dalkeith Gardens neither cracked or had spots on them." This is easily accounted for, because on light dry soils the atmosphere is always drier and more buoyant than is the case upon heavy soils. Especially is this so during dull or wet weather. My recollection of the Grapes at Dalkeith when under Mr. Thomson's charge is that their appearance proved (and I daresay many will bear me out in this statement) that they showed signs of growing in the very reverse of a "rather poor dry soil."

Mr. Hugh Henderson affects to sneer at the ignorance displayed by both "A Thinker" and myself, but surely he would respect the opinions of such men as Dr. Lindley when he says, "Beyond all dispute it is by endosmose that vapour is absorbed from the atmosphere and water from the earth; the sap is attracted into fruits by virtue of their greater density." Mr. Kirk pleads for a fair trial being given to the gimlet; to this I say, By all means let those who believe in its efficiency give it a fair trial, keeping the same amount of moisture in the atmosphere after the mutilating operation has been performed as was previous to the berries splitting, but the question under notice is the cause of splitting.

Lastly, Mr. Iggulden agrees with me in saying, "Judicious ventilation, coupled with a moderate heat from the hot-water pipes, is the best preventive of splitting;" but added to this there must be maintained at all times and in all weathers after the stoning period a moderately dry and "buoyant atmosphere." This has long been proved to be beneficial to more sorts of Grapes than the Duke and Golden Champion. Mr. Iggulden's neglected Lady Downe's Vine reminds me of a case that occurred in the heated orchard house here the week before last. This house is partly filled with Cherries in pots, and were at that time changing to ripeness. After a bright morning a sudden change, accompanied with a thunder-storm, set in during the afternoon. On this the ventilators were closed; the man in charge incautiously damped the house. Next morning I observed upon three trees of Governor Wood more split Cherries than I care to see, while May Duke, Bigarreau Napoleon, Werder's Early Black, and Black Tartarian were perfectly free from a split fruit, and only a few were observed upon three trees of Elton. These trees are alike in the most robust state of health, and had not in any way been subjected to

any check whatever, nor the roots gorged with water to send up an extra supply of sap. If this splitting was not caused by endosmose, then what caused it?—J. McINDOE.

HIBBERTIA PERFOLIATA.

AMONGST many interesting plants included in Mr. A. H. Smee's collection at Wallington this *Hibbertia* has for some weeks been flowering very abundantly, its bright yellow St. John's Wort-like flowers rendering the plant highly attractive. Several species of *Hibbertia* are grown in gardens usually trained to pillars or the roof of a conservatory, but *H. perfoliata* is more compact in habit, and, like the small-flowered *H. Reedi*, is better suited for culture in pots. The flowers are not of long



Fig. 117.—*Hibbertia perfoliata*.

duration, but so many are produced and in such close succession that the plant continues ornamental for a considerable time.

PRIMULA OBCONICA.

WITHOUT doubt this is one of the most useful and profuse-flowering plants that has been introduced during recent years. It produces in succession its light delicate trusses of bloom, and would flower the whole year under glass. This is not wise, but it may be flowered for eight months of the year without showing the least signs of exhaustion, the remaining four being sufficient for it to recuperate itself for another season's flowering.

The easy culture and continuous flowering nature of this *Primula* renders it invaluable for the decoration of large houses that have to be kept gay with flowering plants during the autumn, winter, and spring. Those that have not grown it for this purpose should give a trial. In

addition to its adaptability for the purpose named it is very serviceable for room, window, or indoor decoration generally, as it does not appear to be injured in the least by confinement in these positions.

It comes quite true from seed, which should be sown on the surface of fine soil in a pot or pan; if covered the seed will not germinate. Supply water from a fine-rose pot, and cover with a square of glass. The pot or pan in which the seed is sown must be shaded from the sun, and, if practicable, placed in a temperature of 60°. The seed is often a month or six weeks before germinating, and for a time the young plants grow very slowly. The seedlings, as soon as large enough, should be pricked into other pans until they are large enough for 2 or 3-inch pots, and may be grown in heat until they reach this stage. As soon as the plants commence rooting in their pots they may be gradually hardened and grown under cool frame treatment during the summer.

The treatment that suits Chinese *Primulas* will do for this one admirably. The seeds, if sown in spring, will make strong plants in 5 and 6-inch pots by autumn, but if sown now will be very useful for decorative purposes in 3-inch pots, for they flower equally freely in a small state. Very few plants will be raised from a single packet of seed, but fortunately the plants produce crowns freely, and one good plant can be divided into several, which soon become established, and in one season make strong flowering plants. It also produces seed freely, and when once in possession of a few strong plants a good stock from home-saved seed may readily be raised. The plants will form seed pods while flowering in the conservatory or any other structure during the spring, and will ripen it quickly on a shelf close to the glass in a warm house. Sow the seed directly it is ripe.

Even while seeding this *Primula* will continue throwing up flowers from the base, but these should be removed, for the strain of seed-bearing after flowering for months is sufficient to exhaust the plants. Another highly commendable character of this plant is that its foliage never appears to be attacked by insects that infest the majority of plants grown under glass.—CULTIVATOR.

PLAGIARISM.

THE following paragraphs have recently appeared—one of them in the *Evening Standard* of May 30th, and credited to *Land and Water*, in which it also appeared on the same date; the other in the *Journal of Horticulture* of May 21st, page 410. Let us see how they look side by side:—

From the *Journal of Horticulture*, May 21st, 1885.

Young standard fruit trees—Apples for instance—are often sadly neglected. The long straight shoots of hundreds of them are neither shortened at the time of planting nor afterwards. The result of that great error is that a few shoots push from towards the extremities, while the lower portions, to the extent often of 18 inches or more, are practically destitute of growths, and the first crop the trees bear drags down the branches, which never get up again. Such trees are practically spoiled, or at least they are manifestly inferior to others of the same age that have been pruned and the subsequent growths intelligently pinched during the first few years after planting. I would rather shorten the young shoots now with tufts of growth near their tips of trees planted last autumn or this spring than leave them as they are, on the principle of choosing the lesser of two evils. I have recently seen two rather striking examples of ill and well managed fruit trees established four or five years. The former were not shortened after planting, nor have they been pruned since The main branches of the latter are so strong that they would almost or quite bear the owner of them, who is not a "feather-weight," while the branches right down to the main stem were wreathed with blossom. They are in condition to bear more fruit this year than the untended trees possibly can do, and are immeasurably superior, having regard to their future career and productiveness. They are strong, well formed, and studded with spurs, and will need little further pruning.

From *Land and Water* and the *Evening Standard* May 30th, 1885.

Young standard fruit trees—Apples, for instance—are often sadly neglected. The long straight shoots of hundreds of them are neither shortened at the time of planting nor afterwards. The result of that great error is that a few shoots push from towards the extremities, while the lower portions, to the extent often of 18 inches or more, are practically destitute of growths, and the first crop the trees bear drags down the branches, and they never get up again. Such trees are practically spoiled, or, at least, they are manifestly inferior to others of the same age that have been pruned, and the subsequent growths intelligently pinched during the first few years after planting. We would rather shorten the young shoots now with tufts of growth near their tips, that are to be found on trees planted last autumn or this spring. Then leave them as they are, on the principle of choosing the lesser of two evils; and young trees that have been properly pruned, and the young growths pinched back systematically, will have presently main branches so strong that they would bear heavy weights without bending down. Such trees will be in a condition to bear more fruit than the untended trees can possibly do, and they are immeasurably superior, having regard to their future career and productiveness. They will be strong, well formed, and studded with spurs, and will need but comparatively little pruning afterwards.

Evidently some impecunious individual has been busy, and he has bungled in his abbreviation, as after advising his readers to shorten the shoots he tells them to "then leave them where they are." Leave them where? There appears to be something like a triangular form of imposition here; first we have been slightly imposed on, then the *Land and*

Water has been imposed on, and it is very certain the *Evening Standard* has been imposed on, or the paragraph would not have gained admittance to its columns. We are not without hope that we shall be favoured with the name of our admirer who has accomplished this feat, for it seems to us he ought to be credited with his work.

MINIATURE ROSES.

WHERE Roses in small pots are appreciated for purposes of decoration at this season of the year, such varieties as the Pet, Pacqueritte, and Mignonette should be grown in quantity. The two former have pure white and the latter pink flowers, all three being very floriferous. These varieties do well worked on the Briar, but much better upon their own roots. Those who desire a stock for another year may soon obtain one from a few healthy plants. Cuttings strike with great freedom at this season, and any portion of half-ripened wood will do that can be taken off possessing two joints. The cuttings should be inserted in sandy soil directly they are taken from the plant and thoroughly watered after insertion. Cover the cuttings with a bellglass or handlight where they can be kept close and shaded from the sun until they are rooted, which will be in about three weeks if placed in a temperature ranging from 65° to 70°. They will strike equally well in a lower temperature, but are a little longer before they are ready for potting singly. After the young plants are rooted they should be gradually hardened and then placed singly into 3-inch pots. After they are potted they should be kept close until they are rooting freely, when they may be grown under cool airy frame treatment until the approach of frost. They can then be housed in any cool structure from which frost is excluded. During the winter the soil must never be allowed to become dust dry, for this is one of the greatest evils in the successful cultivation of Roses.

These varieties are not strong-rooting, and will need no farther potting until they commence growing in early spring, when they can be placed into 5-inch pots. After potting do not bring them forward in a higher temperature than 45° to 50°, or if not wanted early in the season they may be grown under cool treatment. If a good batch has been raised the number of plants may be divided to form a succession, but on no account should a higher temperature than 55° be maintained. It must be remembered that strong heat is ruinous to Roses, and those that subject their plants to higher temperatures at night than those named need not anticipate success.

In spring when the plants commence growth they should occupy a light position, and if possible one close to the glass. When they commence growing and rooting freely they will push up shoots from the base, which will terminate with a cluster of flowers. If the plants are grown cool they will not exceed 9 inches or 1 foot in height, and will continue to bloom in succession for a long time. While the plants are healthy and growing they will continue producing growths freely from the base and flowering upon them, which is not the case when worked upon any stock however suitable it may be until the plants are upon their own roots and independent of the stock.

These are charming varieties for indoor decoration, and when they have flowered they may be gradually hardened and stood outside for the rest of the season. About the month of August they may be transferred into slightly larger pots, or a portion of the old soil may be carefully removed from the roots and repot the plants in the same size or 6-inch pots, which will probably suit them best for the second season. Plunge the pots at once, covering the surface of the pot and soil to prevent evaporation, and if this is done no water will be needed at the roots. The plants root much better when plunged than when stood upon walks or other positions and frequently watered during the season after potting. They should be housed again in a cool structure and pruned closely during December, the plants will grow freely again from the base and flower profusely. Although old plants flower well from year to year, we prefer raising young plants annually for flowering in 5-inch pots, for they start from the base with greater freedom than the others.

When the pots are full of roots, whether the plants are young or old, liberal feeding should be resorted to either by means of liquid manure or artificial manures applied to the surface. These plants do well in a compost of good fibry loam, one-third of leaf soil, decayed manure passed through a fine sieve, and coarse sand.

ROSES IN POTS.—I think Mr. Joseph Potts will find the information required if he carefully reads my article on page 564, last volume, December 25th, continued on page 37, January 8th, present volume. He will find farther information on forcing Hybrid Perpetual Roses in pots on page 168, February 26th, and continued on page 187, March 5th. If your correspondent

does not possess these numbers I have no doubt he can obtain them by applying to the publisher, and failing this I shall be pleased to give him the information he needs in these pages. I may add, if any points in the articles referred to do not appear clear I will willingly do my best to assist him.—WM. BARDNEY.

THE PARTIALITY OF APHIDES FOR STRONGLY SCENTED PLANTS.

UPON this subject Mr. Anderson remarks in the June number of the "Entomologist"—The predilection of these insects for the leaves of highly scented conservatory plants, and plants bearing fragrant flowers, is certainly remarkable. For example, the strongly perfumed Pelargoniums are peculiarly liable to be infested; the other Geraniums, with the exception of the Ivy-leaved, are never, or hardly ever, thus blighted, and it may be noted the stronger the odour the more liable the aphid attack, the Nutmeg, the Oakleaf, the Lemon, and the old-fashioned "Unique," with its scent of peppermint, being especial penchants of the green fly. Look, too, at the Rose, at the Lemon Verbena, the *Daphne odorata*, and the Carnations, how thickly covered they all become with the detestable little pests! With plants out of doors the rule seems to be reversed, for whilst Gooseberries and Currant trees, white and red, are frequently sadly disfigured by thick swarms of aphides, the aromatic Black Currant* and the poisonous (?) American Ribes escape unmolested. The only reason for the preference given to the scented plants of the greenhouse that I can suggest is that they are, as a rule, more succulent and juicy than others, and it may be the aroma imparts a flavour which to the *gout* of aphid epicures is somewhat analogous to the bouquet of choice wines.—J. R. S. C.

WALTHAM ABBEY SHOW.

JUNE 4TH AND 5TH.

WALTHAM ABBEY having been selected this year as the site of the Essex Agricultural Society's annual Exhibition the opportunity was considered a fitting one to obtain a horticultural show at the same time, and this the promoters were enabled to provide, owing to the substantial support their project received. Sir T. Fowell Buxton, Bart., and W. Melles, Esq., took much interest in the scheme, and as Chairman and Vice-Chairman respectively rendered much assistance in ensuring its success. To Mr. George Paul and Mr. Hubert Gough, the Hon. Secretaries, great credit is also due, as both worked untiringly, and the very satisfactory Show secured is due in a large measure to their energy and perseverance. It is to be hoped that the financial results will be sufficiently substantial to permit the Show being held annually, for if so, many admirable exhibits could be obtained. At the first attempt it augurs well for an increase at subsequent shows. If, however, it is found practicable to have another exhibition it would be advantageous if a site could be found nearer the station, as the inconvenience to exhibitors and visitors would be greatly lessened.

Four large marquees were filled with plants, flowers, and vegetables, either in competition or otherwise, and it must be remarked that an effort was made to avoid the too frequent formality in the arrangement of the exhibits at such gatherings, the result being so pleasing that it might well be imitated. The entrance marquee leading from the Agricultural Society's ground was devoted to some imposing groups of Pelargoniums, Rhododendrons, Conifers, and miscellaneous flowering plants, which had a very bright effect, forming two long banks upon each side, and constituted an attractive introduction to the other marquees. The second of these was filled with new and rare plants, Caladiums, and other contributions, while the main features of the Show were concentrated in a spacious marquee, the third of the series from the entrance. This contained the groups of well-grown stove and greenhouse plants, fine-foliage plants, Ferns, Roses, and Alpine plants, which were disposed in two informal banks, a few Palms, with small groups of Roses, &c., occupying the centre, and served greatly to diversify the appearance of the exhibits, and yet allowed abundant space for visitors. The fourth marquee was occupied with exceedingly fine Caladiums, Orchids, cut flowers, fruit, and vegetables, but neither of the two last-named were largely represented, and the substantial prizes of £5, £3, and £2 for a collection of fruits strangely enough did not induce one exhibitor to enter. The prizes in the majority of the classes were liberal, £10 being offered as the leading prize for twelve stove and greenhouse plants, and the same number of fine-foliaged plants. From £5 to £2 were offered in several classes, and it was not surprising therefore that some handsome specimens were secured from celebrated growers.

NEW AND RARE PLANTS.—Two groups of these were staged, Mr. B. S. Williams, Upper Holloway, being awarded the first honours for a valuable collection containing a great variety of handsome distinct plants, of which the following were the most noteworthy. The neat striped *Cypripedium ciliolare*, the dark red *Nepenthes Mastersiana*, the bright scarlet *Hæmanthus Kalbreyeri*, a graceful narrow-leaved *Croton Mrs. Dorman*, an elegant Palm *Nenga Wendlandi*, *Eurya angustifolia variegata*, a pretty dwarf plant with narrow green and white leaves; *Selaginella grandis*, very handsome rich green; *Alocasia Putzei* with bold dark green leaves veined with silver; large plants of *Dracæna Lindenii*, *Davallia fœniculacea*, *Hymenophyllum angustatum*, and *Adiantum cuneatum grandiceps*, all pretty Ferns and *Azalea Mrs. Buist*, one of the amœna type with neat white flowers. Mr. H. James, Castle Nursery, Lower Norwood, was the other exhibitor, and gained the second prize with a smaller but choice collection, of which the large *Yucca filamentosa variegata*, recently shown at Kensington, was very prominent, *Nepenthes Courtii*, *Pothos cannaefolia*, *Dieffenbachia Jenmani*, *Odontoglossum nævium majus*, *Selaginella involvens variegata*, and *Dendrobium Wardianum album* also being noteworthy plants.

GROUPS.—An important feature in the Exhibition was formed by the

*This is an error, the Black Currant does at times suffer severely, if less than its brethren.

entries in this class, Messrs. G. Paul & Son, Cheshunt, contributing very largely to the extent and beauty of the display, and well won the premier award in the class for the best groups. Their Roses in pots were extremely good, compact bushes in admirable health, and loaded with large bright blooms. Very rarely indeed are Roses seen so handsome thus early. Juno, Edouard Morren, Ulrich Brunner, Centifolia rosea, Anna Olivier. Souvenir d'un Ami, Madame Victor Verdier, and the charming miniature white Rose. Parqueritte were especially noteworthy amongst many others of great merit in the entrance tent some beautiful groups of dwarf and standard Rhododendrons were arranged by the same firm, and included all the best of the varieties, some exceedingly bright in colour, and all bearing large dense heads of blooms. The second prize in this class was adjudged to Messrs. J. & J. Hayes, Edmondton, for groups of Pelargoniums, Cinerarias, Calceolarias, Ageratum, and Fuchsias. The Pelargoniums, however, of the Zonal and decorative show types were uncommonly handsome, and formed one of the finest groups of the kind that we have seen. Particularly notable amongst the first named was a variety named Robert Hayes, of an extremely rich bright rose pink, the flowers large, well formed, and the truss very full; the habit is compact and free. It will prove a most useful variety for ornamental purposes, and well deserved a certificate. One variety amongst the decorative show forms was named Fanny, and was both distinct and beautiful. The flowers are pale delicate pink with a deep red blotch in the upper petals, the margin undulated, and the trusses large. Extra prizes were awarded to Mr. Rumsey, Waltham Cross, for a large collection of Pelargoniums, hardy plants, Roses, and Palms, and to Messrs. Cutbush and Son, Highgate, for a handsome group of stove and greenhouse plants, the Ericas being uncommonly well grown and freely flowered. A class was also provided for groups of fifty plants in pots, in which the first prize was won by Mr. Rochford with fine examples of Rhodanthes, Fuchsias, Calceolarias, and Mignonette. In the gardeners' class Messrs. Turk, Keers, and Green were the prizewinners with tasteful groups.

STOVE AND GREENHOUSE PLANTS.—The principal class in this section of the schedule was that for twelve specimens, and though there were only two competitors the plants entered by both were very healthy, and those with which Mr. Donald, gardener to J. G. Barclay, Esq., Leyton, gained the leading prize were especially so. They are very much in the style of Messrs. Cypher's plants, not so large, but equally fresh, even, and well flowered, and exactly what such plants ought to be. The best of the plants were Erica æmula globular in form, about 3 feet in diameter, and covered with flowers. Stephanotis floribunda was similarly fine; Apehexis purpurea, globular, very even, and beautiful; Statice profusa, Boronia pinnata, Ixora Fraseri, all good; and Rhododendron odoratum, 4 feet in diameter and splendidly flowered. Mr. Donald is well known as a careful gardener and skilful plantsman, but he has never given better examples of his abilities in plant culture than the plants at the Waltham Abbey Show, and it is regrettable that such specimens are not more frequently seen at exhibitions instead of huge plants in poor condition. Mr. James was placed second with plants that have gained him several honours this year and which still appear but little the worse for their travel.

FINE-FOLIAGE PLANTS.—Repeating his success in the preceding class, Mr. Donald secured first honours with twelve specimen fine-foliage plants, well grown healthy examples of the following:—Croton variegatus, Latania borbonica, Phyllotænium Lindenii, Anthurium crystallinum, Dracæna Baptisti, Croton angustifolius, Cycas revoluta, Chamaerops humilis, Croton pictus, and Dasylyrion acrotichum; the Cycas and the Dasylyrion were very handsome and of considerable size. Mr. C. Rann, gardener to J. Warren, Esq., Handcross Park, Crawley, lost the premier prize by a few points only, for his plants were of great merit, and in much better condition than such large plants are usually seen. Particularly good were Cycas circinalis, Croton albicans, Beaucarnea recurvata, Alocasia metallica, Dieffenbachia illustris, Bonaparteia stricta, and Kentia Belmoreana. Mr. Turk, gardener to W. Melles, Esq., Sewardstone Lodge, Chingford, took the third place with large handsome plants, amongst them being an example of Beaucarnea recurvata 8 feet high. An extra prize was awarded to Mr. H. James, whose principal plant was Stevensonia grandifolia. A class was provided for five foliage plants in which several local gardeners competed. Mr. Turk was the most successful, taking the first place with well-grown Palms and a fine Yucca aloifolia variegata. Mr. Riding, gardener to R. Edwards, Esq., Beech Hill, Langton, and Mr. Gilks, gardener to A. Borwick, Esq., Higham Hill, Walthamstow, were second and third respectively, showing large healthy plants.

Ferns were represented by several notable collections, especially in the class for ten plants, the best of which were from Mr. Rann, and included the largest specimens that are so well known at exhibitions, and which have gained him so many honours. Davallia Mooreana, Gleichenias flabellata, rupestris, and Mendeli, were the principal, though Lomaria Vroomii and Dicksonia squarrosa were also fine plants. The second place was taken by Mr. Donald, whose plants, like those already noted, were remarkable for their vigorous health. Mr. Turk gained the third prize, and Mr. Green, gardener to J. Warren, Esq., Capel House, an extra prize. With four Ferns Mr. Riding was the leading exhibitor, having Adiantum formosum in capital condition.

Caladiums were admirably shown by several gardeners, but those from Mr. Turk were of exceptional merit, large with well-developed foliage, and richly coloured. They easily won the first prize in the class for ten plants, the best varieties being Pyrrhus, red and green; Herold, white and green; Luddemanni, white, green, and red; Mr. A. Hardy, similar colours; Candidum, white and green; Sirius, red and green; Mithridate, red and green; Arsemise and Comtesse de Maille. These were the best plants we have seen this season, and very rarely are such well-grown samples staged at exhibitions. The same exhibitor was also first with three Caladiums, and was followed in each class by Mr. Ridding, with smaller, but brightly coloured plants. Mr. Keers, gardener to F. Cater, Esq., Durrants, Enfield, being third with the triplet. Mr. Rann had a very pretty half-dozen Crotons, dwarf and brightly coloured examples of volutus, Henryanus, Morti, variegatus, and Cooperi.

ORCHIDS.—There was not a large display of these plants, but those shown were well-flowered, and several good varieties were represented. Mr. Gilks was the leading exhibitor, taking first with ten and six plants, having the following—Cymbidium Lowianum, two spikes of thirty-two

flowers each; Odontoglossum Halli, three spikes; Lycaste Skinneri, a pretty variety; Masdevallia Veitchiana; Cymbidium eburneum; Lælia purpurata, a good variety; Odontoglossum Alexandræ, Dendrobium nobile, Masdevallia Lindenii, flowering freely; Cattleya lobata. Mr. Rann was the only exhibitor of five Orchids, and was awarded the first prize, his best plants being Cypripediums barbatum giganteum and nigrum, Aerides odoratum, and Cattleya Mossiae.

An excellent collection of hardy alpine plants gained Messrs. Paul and Son the premier prize in that class, a large number of choice and beautiful species and varieties being included, similar to those which have been so much admired at Kensington recently. Mr. Gilks also had a good selection in his second-prize group.

Cut flowers were shown by Mr. Green, Mr. Gilks, and Mr. Cornish, gardener to J. Downing, Esq., The Shrubbery, Enfield. Grapes were not of remarkable merit. Mr. Green had the only white Grapes, being first with Buckland Sweetwater, and Mr. Herrington, gardener to Mrs. Chisenhall Marsh, Stanstead House, Stanstead, was first with Black Hamburgs in the other class. Extra prizes were awarded to Mr. Rochford for good Melons and Cucumbers, and to Mr. Hamilton for some handsome Tomatoes and Cucumbers. Vegetables were not abundant, Messrs. Stratford, Green, and Herrington taking the prizes for collections with clean well-grown specimens.

Miscellaneous exhibits comprised a handsome group of stove and greenhouse plants from Mr. B. S. Williams, which occupied considerable space in the second marquee from the entrance, and was greatly admired each day by the numerous visitors. An extra prize was awarded to Messrs. T. Rivers and Son, Sawbridgeworth, for a most interesting group of fruit trees in pots, comprising Peaches, Plums, Cherries, Pears, and Apples, mostly well loaded with fruits. Black Biggareau Cherries were uncommonly fine. Rivers' Early Favourite Plums, Hale's Early Peach, Belle Dubois Apple, Pitmaston Duchesse Pear, and White Marseilles Fig were also evidently well suited for culture in pots.

THE HERBACEOUS PLANT BORDER.

SEEING that the old-fashioned flowers are again occupying the positions in gardens as they did in days of yore, when nought else could vie with them, it is only fair to assume that hardy herbaceous perennials to a very great extent are indispensable in gardens where beauty and grace combined with a lengthened period of blooming are to be had. Fashion, which has played her part in sweeping hardy perennials from her sight, seems now to be exerting similar force in favour of their more extended cultivation. It is now some years since the revival of hardy plants set in, and one of the greatest proofs that can be adduced in support of them is to be gleaned from the number of nurserymen who are either making their cultivation a leading feature or devoting their whole time to them. Perhaps some will remark that this is only one department out of the many in gardening; true, but it is one also from which a maximum amount of pleasure may be derived, and that at a minimum cost. It is the class of gardening for the million of persons who, having a love of gardening at heart, cannot afford the expense of greenhouses or heated structures wherein to grow the flowers of their choice.

But I must not longer dwell on preliminaries such as these, for my intent when I took pen in hand was to say a few words, and if possible to give a few hints, to any who may be interested in hardy plant culture. First, then, with respect to planting, on which many opinions exist. From years of practical experience among these plants I am convinced that no time is better suited for planting the great majority of hardy perennials than a showery April or the early part of May. At this time new roots are being formed freely; and this, coupled with the warm showers and sunshine which are invariably experienced at this season, soon promotes new and active growth above and below. Spring-planted perennials, too, have the additional advantage of making fine plants ere the autumn arrives, and these having become thoroughly established in their respective places, are calculated to endure far greater hardships with impunity than those planted in autumn, which have to lie dormant for several months. Not only this, but the soil itself is naturally in a better condition for planting. Still, there are many for which autumn planting is very essential, as e.g. herbaceous Pæonies, which may be planted any time from October to February, and there are many others whose constitutions are so extremely robust and hardy that they may be planted on any showery day in the year.

It is surprising that few know anything of a collection of herbaceous plants beyond the ordinary border plants such as Phloxes, Irises, Delphiniums, and Pæonies. Still, this very point—i.e., an insufficient knowledge of the plants themselves, has debarred many from enjoying them; year by year they are, however, becoming more generally known and appreciated. The grand collections of hardy plants which are brought together at our leading exhibitions afford visitors an excellent opportunity of extending their knowledge and likewise in making a selection. The conferences are assisting in the same direction. Daffodils have received much attention, the Primulas are to be treated in the same way, and later on the genus Liliium might form another fit subject for thought and discussion.

The extent to which a garden may be beautified for a great part of the year when planted exclusively with hardy plants is only known to the few that have for years made them their special study, for we

begin with the Christmas Rose and we end with it. Closely following we have Winter Aconites and Snowdrops, some species of Crocus Rhododendron præcox, Iris reticulata, Chionodoxa or Snow Glory, and in the two last named we have two of the gems of spring. The former I always hear spoken of as a charming plant, but in some cases the latter is mentioned in disparaging terms and brought into comparison with Scilla sibirica. To those who thoroughly know both there is no need for comparison whatever. None can gainsay the intense blue of the Squill and admire it; and who, having seen it in good form, can fail to admire that pleasing combination of colours which so characterises the "Snow Glory?" For floriferousness the latter is the best. As a plant for naturalising it is simply unique among spring bulbs, and its free seeding qualities will ere long make it one of the most popular of hardy plants. On comparing the two plants the Scilla is not adapted for naturalising, nor does it seed with the remarkable freedom of the Chionodoxa; in some soils, too, the Scilla degenerates, and I have also experienced it suffering severely from the attacks of slugs. Still in themselves the two plants are so widely distinct that I consider there was abundant room for the reintroduction of the Chionodoxa, and should the progress of the former be marred by the latter it only goes to show which plant is most appreciated; both, however, are very beautiful, and their appearance in spring most welcome. I have upon more than one occasion compared a bed of the seedlings of the Snow Glory to a bed of spring Onions, and I know of no better comparison; and who, may I inquire, has experienced the Siberian Squill springing up with such freedom as this? Where the Chionodoxa flowers this spring there let its seeds fall or at least a portion of them, and just before they are ready to fall from the capsules loosen the surface of the soil beneath them; into this they will fall, after which cover lightly with a little fine soil. You will find them in abundance next spring after the manner I have stated.—J.

HISTORY OF THE OSAGE ORANGE.

THERE are several interesting points in the botanical history of the Osage Orange. It is peculiar that the tree is native only in Arkansas, and is not generally common even there. It was noticed by the early travellers along the Red River and other tributaries to the Mississippi. Its elastic wood was long held in repute by the Indians for bows, and they called the tree Bow-wood. The French fur dealers gallicised the name, making it Bois d'Arc. The first botanist to notice the plant was the famous Thomas Nuttall, at one time professor in Harvard. About 1810 he first saw living plants. These were grown in a garden in St. Louis. Recognising in the plant the type of an entirely new genus, Nuttall named it "in honour of the celebrated geologist, philosopher, and patron of natural science, William Maclure" of Pennsylvania. It is consequently known as Maclura. On account of the Orange-like nature of the tree he named it "Orange-like Maclura," *M. aurantiaca*. In some parts of the country it is said to be known as Bodock, a contraction of the French Bois d'Arc.

The great resemblance of the tree and its fruit to the Orange is also peculiar, and especially when we consider that its true nature is very widely different. In aspect the young or fruitless tree is much like the Orange, while anyone who has seen its peculiar warty fruit must have thought of a green Orange. Coming from the country of the Osage Indians it became known as the Osage Orange. The plant belongs to the Nettle family, along with the Nettles, Elms, Figs, Mulberries, Cow-tree, Breadfruit, Banyan, and Indiarubber tree. All are familiar, no doubt, with the nature of the Mulberry fruit—a long cluster of fleshy and thickened flowers. The large fruit of the Maclura is a dense aggregation of separate, thickened flowers. The wood is solid, heavy, and durable. It takes a good polish and is ornamental. The following from Nuttall gives an idea of the appearance the tree made in its native country when first seen by a botanist:—"We saw a few old, ill-grown trees on the banks of the Pottos, a few miles from Fort Smith. It was only on the rich low bottom lands of Red River, near the confluence of the Kiamesha, that we beheld the Maclura in perfection, forming a great part of the prevailing umbrageous forest, and attaining an elevation of 50 or 60 feet and a diameter between 2 and 3 feet. At all times it strikes the beholder as something remarkable in the northern forest by the beauty and splendour of its dark and shining foliage, and its strong resemblance to the Orange."—(*American Cultivator*.)

CORONILLA GLAUCA.

It is in many respects fortunate that the rage for new plants does not entirely drive out of cultivation old ones of merit; still there is as much honour in restoring an old acquaintance to the position it justly deserves as in introducing a new comer to notice. Many old neglected plants are being brought back to do duty in the same way as our forefathers made use of them, or, by a different mode of treatment, they are directed into some other channel of usefulness, and are then found better than some recently introduced plant which is both scarce and costly. I have a weakness for old plants, and amongst those which I admire for their beauty and utility is that to which attention is now called.

Coronilla glauca has long been known to the gardening world, and had it been a stove plant, instead of one of the hardiest of our greenhouse

subjects, it is likely it would have been oftener met with than it now is; but as it is so easily cultivated, and all but perfectly hardy, I have no hesitation in calling on all those who wish to have as good a display as possible in the dead winter months to commence its cultivation. With ordinary care it will bloom in the autumn, several months earlier than the *Cytisus*, which it in some degree resembles; nay, the *Coronilla* will in fine sunny seasons set its flowers sufficiently early in the season to expand into full bloom early in the autumn. I think I have seen one growing out of doors in full bloom by the middle of September, and I am not sure if it was not much earlier than this; the season, however, was particularly warm and dry, alike favouring early growth and the ripening of the wood, and also tending to hasten the embryo buds to expand into full blossom. The situation was sunny, but the ground in which the *Coronilla* was grown was also occupied by neighbouring plants and fruit trees. The *Coronilla*, checked in its early progress, finished its growth by well-ripened flower buds, which quickly developed themselves into bright clusters of rich yellow bloom which continued a long time in perfection, and even when they were gone the plant had not the bad appearance which many other fine-flowering plants present when their flowering is over, for its foliage is ornamental at all times.

Perhaps the best way to manage this plant is to strike a number of cuttings every year, and assuming them to be in small pots at the end of the season, let them be put into larger ones about the time they begin to grow, using a good proportion of sand in the mixture. If it be considered necessary to repot a part of the stock again, it should be remembered that the earlier in the summer the growth is completed the sooner the plants will be in bloom. To rootbound plants standing in the full sun, and in a position where their roots are not tempted to run into the ground below, water must, of course, be given in sufficient quantities to prevent flagging. Let them have as much sun as possible, and, unless the latter part of the summer be very dull and sunless, you will be rewarded by well-formed plants obtained without any training, and loaded with flowers, which will come in at times when bloom of any kind is acceptable. With good management a succession of bloom may be kept up till the middle of February, after which the *Cytisus* and other plants take their place. I may add that the *Coronilla* will survive moderately mild winters when growing in a favourable position, and in such places will bloom also in autumn after a hot dry summer, but the chances of its doing so are not sufficiently great to render indoor culture altogether unnecessary.—J. R. N.



AT a general meeting of the ROYAL HORTICULTURAL SOCIETY, held last Tuesday, Major-General Courtenay in the chair, the following candidates were unanimously elected Fellows—viz., J. H. Batty, B. Field, Wyndham Gibbes, Col. Sussex, W. Lennox, Francis MacGowan, A. B. Mitford, C.B.

— IN noticing the HERBACEOUS AND ALPINE PLANTS AT THE MANCHESTER SHOW the name of the owner of the winning collections in the amateurs' class was omitted, and the gardener's only given; we are desired to state that they were from Mr. Broome's garden at Didsbury.

— THE NORTHAMPTONSHIRE HORTICULTURAL SOCIETY will hold two shows this year—one in Delapré Park on August 3rd, and the other on the Northampton Racecourse on September 9th and 10th. Numerous classes are provided, the prizes being liberal, including several contributed by friends of the Society in the district.

— WE have received from our correspondent, "S. P. E. S.," examples of bulbs being formed in the axils of the leaves of a Tulip. These are well developed, one of them being the size of a walnut. These furnish good examples of the fact that bulbs are really underground buds, though they are sometimes produced above ground.

— JEYES' GARDENERS' FRIEND.—We have been favoured with a quantity of this compound for trial, and have found it effectual as a destroyer of weeds and moss on garden paths, and as a powerful insecticide. Care must be taken, however, with this as with most insecticides, not to use it too strong, so as to injure the foliage and young growths of plants; and this can easily be done by reducing its power with water.

— THE summer Exhibition of the LEE, BLACKHEATH, and LEWISHAM HORTICULTURAL SOCIETY is announced to be held on July 8th and 9th. Amongst other special prizes a silver memorial cup will be presented by the President, John Penn, Esq., in memory of the late President, Dr. Carr. This cup is the property of the Society, and after the formal presentation

to the winner of the largest amount of prize money at the summer show, it will remain in the custody of his employer, the gardener to have for permanent possession a silver medal, showing him to have been the winner for that year.

— PRIZES FOR MARGUERITES.—Mr. Ollerhead, from Wimbledon House gardens, writes: "Sir Henry W. Peek, Bart., desires it to be made known that he intends to place in the hands of the Council of the Royal Horticultural Society the sum of £20, to be divided at their discretion into prizes for the well-known section of Chrysanthemums called Marguerites, or French Daisies. Full particulars will be shortly advertised."

— FLOWER SHOWS.—The Wakefield Paxton Society's Window Garden Exhibition will be held on August 8th, and the Ludlow Horticultural Society's Show on August 27th.

— "T. S." sends us the following note on BROCCOLIS FOR SUCCESSION:—"Having seen an article on this vegetable, I may mention the names of three varieties that have produced a supply from the 1st of March to the present time—viz., Sutton's Early White, Sutton's Perfection, and Sutton's Late Queen. The last named I have cut some beautiful heads, 5½ lbs. to 6 lbs., compact, and of good flavour."

— GARDENING APPOINTMENT.—Mr. W. Palmer, foreman, Rood Ashton Park, has been appointed to succeed Mr. Fyffe as head gardener to W. F. W. Dick, Esq., Thames Ditton House, Kingston-on-Thames.

— LIVERPOOL HORTICULTURAL ASSOCIATION.—The seventh summer Exhibition of plants, flowers, fruit, and vegetables, will be held in Sefton Park on Saturday, August 1st, and Monday, August the 3rd. Entries close July 25th. The sixth Exhibition of Chrysanthemums and fruit will be held on Tuesday and Wednesday, November 24th and 25th. Mr. Edward Bridge, Huyton, near Liverpool, is the Secretary.

— A HEAVY and much-needed rain refreshed vegetation in the metropolitan district on Monday last. The downpour continued the whole day, and in parks, gardens, orchards, and fields the benefit is very great. The recently planted flowers and vegetables will now make a good start, and the recently set fruit, which is generally abundant, will swell freely, and there is now good hopes of a golden harvest. From what we learn, however, the rain was by no means general; at Brighton, for instance, the day—the opening of the Great Agricultural Show there—was clear and bright.

— WE had the pleasure of inspecting Mr. McINTOSH'S RHODODENDRONS at Duneevan last Saturday, and they were magnificent. The collection includes hundreds of varieties, the best of the newer ones having been added yearly until the assortment is singularly rich and complete. The shrubs thrive remarkably well in the dark rather sandy soil on a moist base, and as the colours are judiciously arranged the effect as seen from the terrace above is extremely beautiful. The shrubs are grouped in large beds, while a few fine standards on the lawn, laden with noble trusses and relieved by handsome Conifers, contribute powerfully to the general display.

— SOON after the Rhododendrons fade the garden will be rendered imposingly gay by the splendid groups of LILIUMS that are established among the shrubs. The Liliams are growing with great freedom. A plant of *L. Krameri* already exceeds 5 feet in height, while the stems of the *L. auratum* are remarkably strong, one of *L. a. platypetala* being quite remarkable, no doubt girthing upwards of 4 inches; but as it is surrounded with a guard of wire netting it could not be conveniently measured. It will be interesting to note to what extent these vigorous examples produce stem roots during the season, that being a subject to which some of our readers and writers appear to attach importance. It is pleasant to record that Mr. McIntosh is so far recovered as to be able to enjoy his garden, which is undoubtedly one of the best maintained in the kingdom. In the fruit department the crops are abundant.

— THE following SUMMARY OF METEOROLOGICAL OBSERVATIONS AT HODSOCK PRIORY, WORKSOP, NOTTS, for May, 1885, has been sent to us by Mr. Joseph Mallender:—Mean temperature of month, 47.6; maximum on the 28th, 70.8; minimum on the 12th, 27.9; maximum in sun on the 28th, 126.2; minimum on grass on the 7th, 19.4. Warmest day the 28th; coldest day the 7th. Mean temperature of air at 9 A.M., 49.5. Mean temperature of the soil 1 foot deep, 50.0; nights below 32° in shade five, on grass nine. Total duration of sunshine in month, 144 hours, or 30 per cent. of possible. The brightest day the 11th (10.4 hours). We had three sunless days. Total rainfall, 1.73. Maximum fall in twenty-four hours

on the 14th, 3.1 inches. Rain fell on twenty days. During the last ten years only two Mays have been as cold as this one—viz., 1877 and 1879. Rainfall double of last year's, though rather less than any of the preceding seven. Sunshine much less than any of the last four years. Vegetation made scarcely any progress except during the last week. The frosts have damaged the Pear blossom.

— THE monthly dinner of the HORTICULTURAL CLUB was held on Tuesday last, and was largely attended. Amongst those present were Mr. John Lee (Chairman), Messrs. Loder, Girdlestone, G. Paul, J. S. Cousens, Gall, Druery, Upcott Gill, &c. In the evening a discussion on Alpine Plants took place, the subject being opened by the Secretary, who dealt with it in its practical bearing, and dwelt on some of the points which ought to be considered in making a rockery. The discussion was continued by Mr. E. G. Loder, who detailed his method of dealing with such plants as *Phyteuma comosum* and *Gentiana bavarica*, &c.; by Mr. Girdlestone, who spoke of his treatment of *Iris Susiana*, *Edelweiss*, &c.; by Mr. George Paul, who mentioned the success he had amongst other things with bog plants; and by other members. Mr. Girdlestone exhibited a very beautiful box of cut flowers, containing amongst other things *Anthericum Liliastrum*, *Anemone sulphurea*, *Thalictrum adiantifolium*, *Iris Susiana*, *Edelweiss*, *Pentstemon glabrum*, *Rosa rugosa coruscans*. Mr. Druery showed a fine plant of *Saxifraga pyramidalis*, and some interesting blooms were shown by Mr. Geo. Paul, including his new *Saxifrage*, *S. lantoscana superba*. Mr. Porter of Leamington sent up a beautiful plant of his new white decorative *Pelargonium Volonté Nationale album*, which was greatly admired; and Messrs. Francis & Arthur Dickson sent up some splendid *Asparagus*, which was duly appreciated by the members. A most interesting and profitable evening was spent.

MANURES FOR THE ORCHARD AND GARDEN.

[Extract from a paper read by Prof. G. C. Caldwell of Cornell University, before the Massachusetts Horticultural Society, in Boston, March 28th.]

How to manure the garden or the orchard for the most profitable results is one of the most difficult questions the horticulturist has to meet. It is doubtful whether the demand for animal manures is any less urgent now than before the commercial manures became the important articles of trade that they now are; yet in agricultural operations superphosphates, bonemeal, nitrate of soda, and the like have, in many cases, been made to take the place entirely of stable manure with profit. Commercial fertilisers do contain all the food required by crops, and with their assistance only a farm can be brought up from a low condition to a higher one and held there for a series of years.

The value of a commercial fertiliser is based on the quantities of nitrogen, phosphoric acid, and potash that it contains, and in respect to these nutriments we can meet the wants of any crop better by supplying commercial fertilisers than we can by stable manures. Besides this the crop must find in the soil, supplied from some source, lime, magnesia, sulphuric acid in the form of sulphates, of which plaster is one, a very little iron, possibly chlorides, of which common salt is one, and perhaps silica. These substances are found in all good soils, or supplied in fertilisers. Hence we are justified in charging all the cost of the commercial manure to its nitrogen, phosphoric acid, and potash. The rest of the ingredients must be thrown in gratis. All of these matters the stable manure contains also in abundance.

So far no one can claim anything for the stable manure that is not supplied by the commercial fertiliser. Stable manure is distinctively composed largely of dead vegetable and animal matters in process of decay. The product of this decay is the humus or vegetable mould of the soil. About one-fifth of ordinary stable manure is made up of this vegetable and animal matter, while not over six or eight one-thousandths is potash, five to six one-thousandths nitrogen, and three one-thousandths phosphoric acid. Of nitrate of soda one-sixth is nitrogen. Of a good average superphosphate one-eighth is phosphoric acid, and of a German muriate of potash from a third to a half may be potash. But in all other materials there is no vegetable matter, and little or no animal matter. Here, then, is a clear distinction between the two kinds of manure, the stable and the artificial. Four-fifths of dry manure is decaying vegetable and animal matter, about one-fortieth is potash, one-eightieth phosphoric acid, and one-fiftieth nitrogen. About three-fourths of the stable manure is only water, however.

That humus, or vegetable mould, is an important ingredient of a fertile soil no one can doubt. Given two soils equally rich in nitrogen, potash, phosphoric acid, lime, and all matters of such sort, but of which one is poor in humus, the other rich in it, there is not a farmer or gardener who knows soils who would not give more for the soil rich in humus than for the other. In the course of the decaying of these vegetable matters several acid substances are formed, chiefly carbonic acid. These acids act on a large quantity of soluble plant food, and aid in bringing it into solution and in easy reach of the plant.

Commercial fertilisers, it is often observed, do their best when used with stable manure, and this is because the abundance of carbonic acid, generated by the fresh application of such manure, assists in rendering soluble the native foods of the soil.

Prof. Caldwell gave the following comparison of the values of certain kinds of manure:—Cow manure at 1 dollar 16 cents. per 1000 lbs. is not a cheap way of getting plant food; it would be more costly than com-

mercial fertilisers were it not for the large amount of humus-forming material it contains, which may offset the high cost of the plant nutrients in it. But we have just as much of this humus-forming material in horse manure, and the important plant nutrients in that at 1 dollar 54 cents. per 1000 lbs. are cheaper than in the commercial fertilisers. Night soil, at 33 cents. per 1000 lbs. (the cost of hauling), affords plant food at a remarkably cheap rate, much more so than commercial manures. Rockweed, at 1 dollar 21 cents. per 1000 lbs., is an expensive manure. Fish chum, at 6 dollars 50 cents. per 1000 lbs. provides nitrogen and phosphoric acid at a very cheap rate. Hen manure, at 4 dollars per 1000 lbs., is an expensive fertiliser. Farmers' waste, at 78 cents. per 1000 lbs., affords nitrogen and phosphoric acid at a cheap rate.

Prof. Caldwell closed with the following summary :

1, That if enough of the needed elements of the food of the gardener's or horticulturist's crops cannot be obtained in stable manure or other animal waste, it can be procured in the trade in unlimited quantity, and in every degree of availability depending on different grades of solubility, and in the greatest variety of mixtures, to suit any whim or fancy of crop or crop-growers.

2, That profitable crop-growing can be carried on for at least many years with these commercial fertilisers alone.

3, That the most evident distinction between stable manure and commercial fertilisers, and the distinction upon which we should therefore base an explanation of the greater reliability of the former, is its large proportion of vegetable matter or humus-forming material, of which commercial fertilisers contain practically none.

4, The soils contain in a difficultly soluble condition, and therefore not easily fed upon by the crop, all the needed elements of plant food.

5, That humus, by the decay it suffers in the soils, furnishes carbonic acid and other solvent agents, and this carbonic acid appears to play an important part in the nourishment of crops, by bringing this native insoluble stock of plant food within their easy reach.

6, That even if we add water-soluble plant food to the soil, it becomes largely insoluble before the crop can feed upon it or needs it; therefore soluble plant food added to the soil in commercial fertilisers also needs the help of the humus finally for its solution.

7, That plant food, in most animal and vegetable residues used as manures, costs much less than in commercial manure.

8, That in spite of the disadvantages that under some conditions attend the use of commercial fertilisers, they are, nevertheless, a very important and necessary help in crop-growing.

9, That in using these fertilisers the wisest course appears to be to make one's own mixtures of the raw material, as well as for securing a better manure as for economy in the first cost.

THE NATIONAL CARNATION AND PICOTEE, AND NATIONAL AURICULA SOCIETIES (SOUTHERN SECTION).

In case you have not received Mr. Dodwell's balance sheet I send it you. Bacon for printing, £10 14s. 7d., includes all private obnoxious circulars I doubt not, the legitimate printing was small. Messrs. Mallam's account is also charged, and the costs Mr. Dodwell incurred in Mr. Wright's case, with which the Society had nothing whatever to do. He evidently appointed his own auditors. As to the comparison between my contributions and prize money, not a word is said about Mr. Whitbourn's contributions. I may say this much, that if the expenses of placing my flowers as they were placed at the Society's exhibitions were put on one side, and the prizes on the other, the expenses would be largest. That, however, is a private matter dragged in by Mr. Dodwell to do me harm. The balance in February, 1884, was £39 8s., Mr. Dodwell has reduced it to £16 7s. 8d. for the same date this year.—JAS. DOUGLAS.

CLEMATISES.

THE hybridiser has been very busy of late years with this genus, but irrespective of those kinds whose calyx has been so largely developed and so highly coloured, we are sufficiently old-fashioned to loiter with *Corisande* in the bower entwined with the familiar *C. flammula*, for what can be more refreshing and delightful than the fragrance of this good old plant, although its flowers are small and destitute of colour? All the species and varieties of this genus are admirably adapted for covering walls or any blank spaces, or for covering a verandah, porch, trelliswork, or bower, or what is more to our purpose here, for scrambling over old ruins, rootery, or rockwork. In such places even the common English species, *C. Vitalba*—Traveller's Joy, as it is frequently called, in some localities more frequently known as Old Man's Beard—is extremely ornamental, but the more showy species must be seen to be fully appreciated.

In order that Clematisses should display their gorgeous flowers to the greatest advantage on a rockery they should be planted on the top, or on some bold projecting spur, so that the growths may spread over the bare face or scarp of the rockwork, which will thus become draped with gorgeous festoons of colour. Such situations many of the species would appear to select in a state of nature, as the following extract from the notes of the celebrated traveller, Mr. Fortune, will show. In describing his discovery of *C. lanuginosa* he says—"This pretty species was discovered at a place called Tein-tung, near the city of Ningpo. It is there wild on the hill sides, and generally plants itself in light stony soil near the roots of dwarf shrubs, whose stems furnish it with support as it grows. Before the flowering season arrives it has reached the top of the brush-

wood, and its fine star-shaped azure blossoms are then seen for a considerable distance. In this state it is most attractive, and well repays any one who is bold enough to scramble through the brushwood to get a nearer view."

In cultivation we find Clematisses like a deep rich soil; it must nevertheless be well drained, and as the enormous quantity of flowers produced tends to rapidly exhaust the soil, frequent applications of liquid manure during the season will materially benefit the plants. In situations, however, where strong growth is not desired, then withhold very stimulating liquids. These plants may be divided into two sections. First, those which bloom upon the young wood; and second, those which bloom upon the wood of the previous year. By this it will be readily understood that those varieties which bloom early in spring upon the wood of the previous year must be moderately pruned in autumn, for if this operation is left until spring the flowering wood will be entirely cut away. The first section should receive their final pruning in March, so that the old dead branches may be removed before the young growths become entangled with them. We here append a list of some of the best kinds with their colours, but a few of the species which are desirable are given first.

C. alpina.—A plant known also by the name of *Atragene alpina*. It is a dwarf species, usually growing about 3 feet high, and seldom exceeding 4 feet. It has triternate dark green leaves, flowers on long footstalks, solitary deep blue flowers. May and June. Alps of Europe.

C. alpina var. sibirica.—This resembles the normal type in general habit, but the flowers are yellowish white. July. Siberia, &c.

C. Flammula.—Of this deliciously fragrant old species there are several forms. All, however, are white and sweet-scented, differing only in size and robustness. The leaves are small, pinnate, and dark green, whilst the pure white fragrant flowers are borne on branching panicles in great profusion all through the summer and autumn months. South Europe.

C. montana.—This old species is specially valuable on account of its blooms appearing so early in the year. The flowers are large and pure white, with pale green stamens, appearing in April and May. Northern India.

The following are mostly hybrids, which have been raised in this country; the species here given with them have in many instances been used to produce them:—

Albert Victor.—Large, deep lavender, barred with brown.

Alexandra.—Petals broad, reddish violet.

Azurca grandiflora.—Violet blue.

Cærulea odorata.—Small, dark purple, very fragrant.

Fortunei.—Creamy white, double, fragrant. Japan.

Gem.—Rich blue, continuing into late autumn.

Jackmani.—Large, rich violet-purple, a profuse bloomer.

Lady Lovelace.—Double rich blue.

Lanuginosa.—Large, azure blue. China.

Lanuginosa candida.—Large, creamy white.

Lanuginosa nivea.—Large, pure white.

Lucy Lemoine.—Large, double, pure white.

Lord Londesborough.—Deep rich mauve, striped maroon.

Lady Londesborough.—Silvery grey, with pink base.

Magnifica.—Purplish crimson.

Miss Bateman.—Large, pure white, striped with creamy white.

Prince of Wales.—Deep vinous red, shaded violet.

Rubella.—Large, deep claret.

Rubro-violacea.—Maroon, shaded violet.

Standishi.—Violet-purple.

Star of India.—Rich plum, red bars.

Thomas Moore.—Large, rich purplish violet, white stamens.

Tunbridgensis.—Fine shape, deep bluish mauve.

Velutina purpurea.—Large, rich purplish black.

Those who have ample space and require greater variety can be easily accommodated, as there is an endless number of beautiful forms.—W. G. T.

EURYBIA GUNNI.

THOUGH the genus *Eurybia* is now referred to *Olearia* by some botanists, the plant, of which the annexed illustration is a representation, is so much better known under the above title that we have adopted it. The species known are natives of Australia or New Zealand, but one known as *M. corymbosus*, a native of North America, is really an Aster, and should be placed in that genus. The others are greenhouse or hardy evergreen shrubs, mostly with white Aster-like flowers, and some are very ornamental; but the best of these for planting out of doors is *E. Gunni*, the subject of our engraving (fig. 118). Upon a rockery, as it is grown in Mr. T. S. Ware's nursery, Tottenham, this has a beautiful effect during May and June, and might be termed a spring-flowering "Michaelmas Daisy," for in habit and general appearance the shrub closely resembles the compact-growing shrubby Asters that adorn our gardens in September. The flower heads are white with a dark centre, and being produced most freely the plant has a very elegant appearance. At Tottenham and several other places around London it is found to be quite hardy, only requiring a well-drained soil. Messrs. J. Veitch & Sons first brought this plant prominently before the

public, but even now it is by no means plentiful in gardens, and it is strange that such an ornamental shrub should be so much neglected.

THE STEM ROOTS OF LILIUM AURATUM.

YOUR correspondent, "Theta," agrees with my observation that soft flabby bulbs of this *Lilium*, if allowed to flower, seldom survive. I pointed out that the majority of such bulbs produced their stems and flowers only by the aid they received from the stem roots. The bulbs, after they have once flowered, decay simply because no roots have been formed at the base. If plump bulbs are retarded for flowering during

observed wrongly my experience points to the fact that surface roots are the outcome of defective root-activity at the base. "Thinker" is evidently of the same opinion. It appears to me that the correspondents that have written upon this subject would rather encourage these surface roots to perfect the flowers for one season, and then convey the whole to the rubbish heap, in preference to sacrificing the flowers for one season and trying to develop the bulbs for future use. My contention is that when surface roots are encouraged the plants perfect but one lot of flowers in most instances, the bulbs being decayed below at the end of the season; but if they were discouraged would it not induce the formation of roots below? This might be the means of saving many bulbs that are annually



Fig. 118.—EURYBIA GUNNI.

November and December under glass the stems and flowers are not supported by means of basal roots, but in most instances entirely by the roots from the stem. Flowering this *Lilium* during December can be accomplished, but to do so means the sacrifice of the whole of the bulbs, for it is impossible to keep them in good condition for the following year. Experience such as this is the ground upon which my assertion is based that hundreds of *L. auratum* would fail to lengthen their stems and develop their flowers without the aid of surface roots.

Sound healthy bulbs when established have abundance of roots at the base, and stem roots do not form however large the stem or the number of flowers it may produce. I daresay the strong stem mentioned by "Theta" that bore sixty-five flowers had no stem roots unless some accident had befallen the roots at the base. If these surface roots are natural, why are they not produced on all alike? Without I have

at first upon the surface, soon enter the soil, and I have known them fill the pots with roots afterwards, and entirely support the stem and flowers. For some years I grew a batch annually for flowering during the months indicated, always potting them near the surface, and the pots were filled with active roots, but very rarely were any found from the base of the bulbs. I am of opinion that when healthy bulbs are potted low or planted at a fair depth, as "Theta" recommends, they are less liable to form roots on the stem than when planted near the surface.

"Theta" fails to tell us whether this *Lilium* produces stem roots in its native home. I am inclined to think it does not unless the basal roots become inactive from some cause. I readily grant that the summers in Japan are hotter than in England, but this does not prove that *L. auratum* is not liable to "sunstroke" or that the plants grow there fully

lost. Without roots at the base the bulb for the future is useless, and this is the main reason why I advocated an endeavour to induce roots from the base instead of from the top of the bulbs. How can this be done without the removal of the flowering portion of the stem and the destruction of the stem roots as they appear? At any rate, this will either compel roots to form at the base, or the plants will collapse a few months earlier, but there is the probability of saving them.

"Theta" is wrong about stem-roots when the bulbs are potted near the surface, for those so potted produce them first, frequently through the moisture of the atmosphere in which they may be grown. The roots, although

exposed to the sun. Perhaps your correspondent will inform us definitely on this point.—SCIENTIA.

CALMPHOUT IN BELGIUM.

MR. VAN GEERTS' NURSERIES REVISITED.

HAVING a few hours to spare, and only a few, after discharging my duties at the late Horticultural Show at Antwerp, I spent them in this the very interesting country nursery of my good friend, Mr. Charles Van Geert. It was not the first time I had seen Calmpthout, but as the nursery has recently been greatly enlarged, and as the established portion is so unique, I was desirous of seeing the method of arrangement in progress in the important additions.

The extent of land that has been acquired is considerable, and it is admirably adapted for the culture of Coniferae, with ornamental trees and shrubs, being of a sandy nature, free-working, and can be made sufficiently fertile with the addition of leaf soil and vegetable matter for growing the specimens well. The additional ground is first trenched about 2 feet deep, this preparation being considered indispensable, and, though necessarily costly, the long experience of the proprietor satisfies him that this method of investing a certain, even a considerable, amount of capital is sound.

The extension of this nursery is the natural result of the centralisation of the home establishment in Antwerp, for as it is within the fortifications I presume it is in the city. Before the extension of these great works it was in the country. Its enclosure enhanced the value of the land to such a remarkable extent, and so great was the demand for land for building purposes, that street after street was added, until the estate was practically surrounded with buildings, and it was no longer prudent to continue the cultivation of trees and shrubs as heretofore.

THE HOME NURSERY.

When I first visited Antwerp fifteen years ago this was quite a large nursery in comparison with what it is now. Stately houses now stand where trees were growing then. Streets have been completed and others are in formation, one of them commemorating the honourable name of the vendor of the property, for we find a Van Geert Straat, or Rue de Van Geert, both the Flemish and French names being recorded, while another is named after the celebrated botanist Dodonæus, and, I think, another after Linnæus, but am not sure. The land has been sold for about a hundred times the value of that secured in the country—at Calmpthout—for it is the same in Belgium as in England, the land in populous and ever-growing cities has increased in value by leaps and bounds, while that in country districts does not realise nearly the amount it did a few years ago. Indeed, the tract recently secured by Mr. Van Geert has been purchased for considerably less than half the sum he offered for it on a previous occasion. Thus the "agricultural depression," and consequent deterioration in the fee simple value of cultivable land is not confined to Great Britain, but is quite as acute in Belgium—and, indeed, appears to extend all over the European continent. Mr. Van Geert has been fortunate, for he has had plenty of city land to sell at a high figure at the time when he could acquire country property in every respect better for his purpose at a low one. Long may he enjoy his property is the spontaneous wish of all who know him, and he is known by many in many lands.

But a good home reserve is left, and a line drawn beyond which the irrepresive builder must not trespass. This includes the glass structures that will be chiefly devoted to propagating purposes under the immediate supervision of Mr. Charles Van Geert, jun., whose beautiful new residence overlooks the grounds, or at least a portion of them: and here is represented in the stained glass of the windows the progenitors of this old horticultural family; and here, too, instead of the conventional pier-glass over the fireplace is a window in one of the rooms, so that the family and friends can sit round the fire and look over it into the street beyond—a pleasant innovation. This residence Mr. Van Geert, sen., erected for himself, but, unfortunately, has not been able to remove into it owing to the very sad and long-protracted illness of the "light of his dwelling"—his cherished wife; hence, he remains in his smaller but not less comfortable home, and is enlarging his château at Calmpthout for a summer residence, in the hope that the invalid may be able to take possession of it, derive benefit, and make all around her happy once again.

I was glad to see still existing in the house nursery contrivances that impressed me with their usefulness in 1872. Of these I took a rough sketch at the time, and one of them, a plant shelter, is reproduced in fig. 119. We have lately had hot weather in England, and shall possibly have more. In hundreds of gardens such shelters as these would be invaluable for such plants as Camellias and others that require some shade yet abundance of air. If Mr. Smee should prove, as it is not unlikely he will do, that many Orchids are likely to be improved by a sojourn in the open air in summer, these shelters would be the very places for them in the absence of those delightfully shady nooks and dells of his own garden.

Mr. Van Geert's protectors are simply lean-to sheds, arranged back to back on posts, the open path between them affording easy access to the plants. The framework of the roof is covered with split bamboo canes, arranged longitudinally, and put together with stout string—tar-twine would answer admirably, leaving interstices between the canes of a quarter of an inch or so, formed by the twist or knot of the string between cane and cane. Palms, Ferns, Yuccas, Aralias, Camellias, and various other plants are kept under them in summer. They are found better than glass in being cool, and better than canvas, inasmuch as while they exclude the

sun they admit the rain. The coverings can be rolled up in lengths and taken in during winter if desired. In the absence of bamboo, stout plasterers' laths would answer, but not, perhaps, wear so well. Mr. Van Geert told me in 1872 his shelters would last for years, and time has verified his statement.

A simple and very useful trellis for training trees that had been used for some years when I first saw it is in use still, apparently as sound as ever. Two rows of poles, which had been boiled in creosote, are fixed in the ground about 4 feet apart; they meet at the top, 9 or 10 feet high, along which runs a strip of deal as a coping, nailed along the tops of the poles. Struts and stays at the end make the framework perfectly firm, the whole being covered with 6-inch-meshed galvanised wire netting. In the absence of walls such a contrivance would be valuable in many gardens, while the cost of the trellis is trifling. The one referred to has been in use for nearly thirty years, and not a pole has decayed. On the question of durability Mr. Van Geert gives a hint that is worthy of record. He says poles that are creosoted for insertion in the ground should be immediately well painted for the retention of the preservative, much of which would otherwise escape by evaporation, but being sealed by the paint sinks down the pole, settling in the bottom exactly where it is needed for keeping the wood sound.

THE COUNTRY NURSERY.

But I am long in arriving at Calmpthout. It is about forty-five minutes by rail northwards on the main line to Holland. After passing under the fortifications the line passes through a tract of strong land, and so low and level withal that it can be flooded for miles in case of an emergency for the protection of the city. Beyond this is a comparatively barren expanse known as the Campine, occupied mainly with Heather and Scotch Firs, the land being apparently too poor for anything else. Beyond this there is a marked improvement, trees of various kinds growing freely, and the pastures and other crops indicating that if the land is not rich it is moderately fertile. It is light sandy loam, easy to work, and with additions of leaf mould and decayed vegetable matter nothing better could be desired for Conifers, evergreens, and ornamental trees and shrubs. Several acres of land under pasture have been added to the established nursery, and more is in preparation.

The main nursery is a parallelogram, divided longitudinally with hedges of Conifers, beautifully kept, with lower cross hedges at intervals, some of them arching over the walks. The whole is thus broken into a series of panels, differing in size according to the extent of the stock of whatever is under cultivation. The appearance is excellent, the method of arrangement convenient for inspecting everything, and equally so for working purposes, for the number of a panel and avenue has only to be indicated and any ordinary workman can be sent for the execution of any duties, and can hardly make a mistake. Also, as may be easily understood, the close Conifer screens afford valuable shelter against the winds that sweep with great force at times over the wide expanse of level country. The same method of arrangement is being adopted in the extensions—the best proof that it has answered well.

When completed the whole enclosure will be much more than a nursery in the ordinary acceptance of the term, for Mr. Van Geert is engaged in planting a wide border or screen round the margin with the best representative collection of hardy ornamental trees he can produce, with the object of allowing them to remain to develop their characters. The assortment is to be as complete as it is possible for him to make it, and to this end he is searching through Europe and America for trees that will enable him to carry out his design in the most satisfactory manner. This work he is doing for his own pleasure, and for something more—the instruction of others, for great care is being taken in respect of accuracy of nomenclature, and eventually the work will be essentially educational in its character. As far as possible two trees of each kind are, or will be, planted, experience in past trials having dictated the advisability of this precaution against accident, and as conducing better to a definition of the characters of each species or variety.

For years past a system of trials has formed part of the procedure of Mr. Van Geert's business, whose motto appears to be "Prove all things, and increase only that which is good." As an instance of this testing of the varieties in a genus, the Lilac or Syringa may be adduced. In England only three or four species or varieties of Lilacs are usually seen in gardens—namely, the common Lilac and white forms of *Syringa vulgaris* and the smaller-growing Persians. Other and finer varieties are included in the collections of British nurserymen, and the one known as Charles X. has no doubt been pretty freely planted of late, and is largely employed for forcing; still, there are handsome varieties of these beautiful flowering shrubs that are practically unknown to the majority of persons who delight in having gardens and shrubberies beautiful in May; and a good many that are neither distinct nor specially attractive. The difficulty is to make a reliable selection; in fact no one can do so without growing and flowering the shrubs. Mr. Van Geert adopted this course, and procured plants from various sources under about sixty different names. A number of the so-called varieties proved disappointing, several of them being either duplicates of others, or resembling them so closely that they could not be regarded as distinct, while not a few possessed no special feature of excellence. The result of the trial is, that out of the sixty procured only about a dozen are regarded as of sterling worth. These I happened to see flowering, and they are distinct and meritorious.

It appears to be somewhat generally understood that the popular name of the shrub that renders pleasure grounds so delightful is derived from its familiar and pretty colour—Lilac. This is not so. The so-called Lilac (*Syringa vulgaris*) is a native of Persia, and *Lilac* is its Persian

name, the final letter having become suppressed, hence Lilac. A few Lilacs, then, worthy of note and of culture that I saw flowering at Calmphtout are the following—Dr. Lindley, massive trusses of purplish lilac flowers; Alba grandiflora, splendid spikes of large pure waxy blooms; Gloire de Moulins, very free, dark, and effective; Goliath, immense trusses of dark lilac flowers; Duc d'Orleans, soft rose colour, late, distinct, and attractive; Schweclavina, silvery bluish, what most ladies would describe as "sweetly pretty;" Verschaffelti, pale lilac, bold trusses; Rubra insignis, dark lilac, massive heads; Gloire de Courcelles, very large, medium colour, late; Madame Briot, lilac deepening to violet, the darkest of all; Hyacinthiflora, a distinct and beautiful variety with fine spikes and symmetrical double flowers; and azurea plena, double, free and effective.

This is the best and most distinct assortment of Lilacs I have ever seen; the varieties would add a feature of interest to any garden, and hence their names are recorded here.

A similar trial has been made with Honeysuckles, all the varieties possible having been procured and grown long enough for testing their merits. The result of this is, that from scores they have been reduced to about a dozen that are really distinct and meritorious. Instead, however, of publishing the names of these, space can be more usefully employed by giving a hint on supporting the plants. They are secured to poles along each side of a walk, and this Honeysuckle section is very delightful from now onwards through the season. The poles employed have roots. They are really young Fir trees—Conifers of various kinds that have been divested to a great extent of their side branches. Some of them are dead, while others are permitted to push a few sprays; but even those that are lifeless are found to last very much longer than if they had been chopped

the year have no superiors and few equals as dwarf to medium-sized flowering shrubs, and they are represented in great variety of colour from white through all the shades of rose to purplish crimson, some having gold and silver variegated leaves. They do not need rich soil, and the less they are pruned the better, for as soon as they produce hard short-jointed wood they flower in profusion. Spiræas also are under trial by Mr. Van Geert, with the object of weeding out several that are inferior and correcting the nomenclature, which is more or less confused. The most effective that was flowering in May was *S. prunifolia flore plena*. It is well enough known in England, and is grown in many nurseries, from which it should pass in ten times greater numbers than it does into gardens all over the land.

Amongst the ornamental-foliaged deciduous trees the Golden Elm, *Ulmus Dampieri aurea*, attracted notice by its bright golden leaves, which, I am informed, retain their colour quite through the season. This tree must therefore be conspicuously effective in association with the prevailing green of ornamental plantations. In rich contrast were the crimson Plane-leaved Maples, especially *Acer platanoides Reitenbachi* and *A. p. Schwedleri*, that were quite glowing in colour, while *A. Pseudo-Platanus Woolei*, the Golden Sycamore, is extremely telling. Tulip Trees are represented in various forms and colours, some of the varieties having originated here, and are highly distinct, while of Oaks there is a very complete collection.

Evergreens embrace rich collections of Hollies, Rhododendrons, and Box. Most of the Hollies we have in England, but of one variety I never saw such a fine stock—namely, *Ilex camelliæfolia*. I am inclined to think Mr. Van Geert is either the raiser or introducer of it; but whether he is or not, it is a free-growing, bold, smooth-leaved handsome variety. It



Fig. 119.—VAN GEERT'S PLANT SHADE.

ff and the stems merely inserted in the ordinary way. By digging them up and planting instead of chopping off and sticking in, they are rendered much more firm, besides being more durable, and hence this simple plan is highly recommended. Those supports that are alive and allowed to grow somewhat will last a lifetime, and they do not in the slightest degree impede the growth of the plants with which they are clothed.

Particular attention appears to be paid to hardy deciduous Magnolias, and Mr. Van Geert cannot understand why these handsome spring-flowering trees are not more extensively grown in England. They endure the Belgian winters, which are, as a rule, more severe than the winters in England, at least in the southern counties. *Magnolia conspicua* is grown somewhat sparingly around London, and is the most beautiful flowering tree of its season, being conspicuous indeed, especially in the twilight when laden with its large almost Water Lily-like flowers. But dozens of varieties are grown at Calmphtout, and they stand the winters as well as do Hollies and Rhododendrons. Possibly the autumns are brighter on the Continent than with us, and the wood is better ripened; this, however, is only surmise, but it is a fact that Pear and Apple trees that ought to be equally well ripened have suffered far more severely in Belgium than they did in this country during the late severe winters. It seems somewhat strange, then, if the handsome Magnolias would not live, grow, and flower in British gardens.

Hibiscus syriacus in variety, which is certainly one of the most handsome of summer-flowering shrubs, apparently receives more attention on the Continent than with us, a dozen distinct forms being grown in the nursery in question. In Battersea Park the splendid bushes of this shrub are the most beautiful objects in the shrubberies in August, and it is a little surprising they are not more extensively grown in private gardens. They are not particular as to soil; the main point is not to overcrowd them, but let them have plenty of sun and air to ripen their growths.

Precisely similar remarks apply to Weigelas, which at this season of

is quite as free and as noticeable as *Ilex Hodginsi*, which is one of the best of all evergreens for towns, and hence is in great demand in manufacturing districts. For the same purpose the Camellia-leaved Holly is almost certain to prove at least as good, while it is decidedly more hardy, Hodgins' Holly bearing unmistakable marks of injury by frost, while the others passed through the same winters unscathed. In sharp contrast is Fortune's Holly, *Ilex Fortunei*, with leaves like Box, and variegated, also the Myrtle-leaved Holly, dwarf and dense.

Amongst the Boxes the Japanese varieties arrest notice, especially the varieties of *Buxus Fortunei*, some of which are of a bright tender green, almost buff, yet, to use a familiar colloquism, are as "hard as iron." But the most striking of all is *B. japonica aurea*, or, as it is popularly known, Van Geert's Golden Box. It is sufficiently dwarf in habit as to be suitable for edgings, and long lines of it are seen as bright as the Golden Feather Pyrethrum, yet when let alone it forms globular golden masses that show to great advantage near the margins of shrubberies. Some very good examples of it may be seen planted round a mass of Conifers in the grounds of the International Exhibition at Antwerp, and others still finer in King Leopold's Park at Laeken. Frost has never been known to injure this the brightest of all varieties of the hardy genus to which it belongs, and it would seem to be only a question of time for it to spread into all European gardens. It stands alone in its distinctness and its own peculiar effectiveness.

Mahonia rotundifolia Hervei is particularly fine and smooth, no spines, and *M. latifolia* far excels the typical species *M. aquifolia*. *Crataegus Pyracantha Lalandi* is also superior to the type, forming a handsome pyramid which flowers and fruits freely. *Hedera arborea fructuluta* was studded with golden berries, and the Ledums, *buxifolia* and *palustris*, clothed with pure white flowers are admirably adapted for rockeries. And so I might go on; but a little, and it can only be a little, should be said about Conifers.

The collection of these is without doubt one of the best in Europe; and

all, from the smallest to the largest, are perfectly formed specimens, every one being allowed room enough to grow without touching its neighbour. A system is adopted that enables them to be transplanted at almost any period of the year. It is in this way: Every excavation for their reception is lined as it were with the carefully collected and prepared leaf mould. To this the roots cling as if they do not like to leave it; whereas, if it is spread over the land and dug in comparatively fibreless roots dart out in all directions, and as a consequence the specimens cannot be removed so safely and well. Splendid examples were being arranged to form avenues of *Abies Nordmanniana* and *A. Albertiana* alternately, a good effect being produced at once, and of these specimens probably not one will fail to grow. These are two beautiful Conifers, the one massive, the other elegant. The finest example of the latter that I know, and possibly the best in Europe, is in Mr. McIntosh's garden at Dunevan, Surrey—a model garden both as to arrangement and high keeping. This specimen is apparently 70 feet high, its lower branches sweeping the ground like broad flat boughs of the Cedar of Lebanon, the soft yellowish green of the young growths, and the dark green of the older leaves having a most pleasing effect. No collection of Conifers is complete without examples of Prince Albert's Spruce. It is evidently allied to the Hemlock Spruce, but is vastly more stately, and in every way superior. Very striking at Calmpthout, too, and distinctly beautiful, are some of the forms of *Abies concolor*, notably *A. c. violacea*, and the variety *fastigiata*. The leaves are distinctly suffused with blue, the colour being perhaps the more pronounced by the clear contrasting pale green of the young shoots. These varieties, and 129 others, can be seen in the gold medal group in the Antwerp Exhibition grounds throughout the summer, and I find that several gardeners and others are hoping to visit Belgium this year. They will not regret it, especially if they escape an attack of *mal de mer*, and even that may do them good. *Abies Alcoquiana* is beautiful when tall enough, as a specimen at Calmpthout is, for the under sides of the leaves to be seen, the mingling of blue and green being so very decided. *A. Douglasi glauca* is distinct and attractive, the effect of numbers of specimens, about 6 feet high, being enhanced by the clusters of female catkins varying in colour from pale yellow to bright crimson. This floriferousness may have been the result of transplanting, but be this as it may, the effect was very remarkable. *Abies Hookeriana* is represented by thousands, the parent tree being about 12 feet high and quite Fern-like in appearance. This is accurately described in Messrs. Veitch's admirable work on Conifers, and both the work and the tree should be had by all who are interested in Coniferae. *Abies orientalis* (or *Wittmaniana*) may be seen 30 feet high, and is one of the most distinct and elegant of the family. Of *Abies siberica* there is a magnificent specimen, and one that can scarcely fail to tempt purchasers, but the owner of it will tell them that it commences growth too soon in the latitude of Belgium and England, and is hence liable to be injured by spring frosts. Messrs. Veitch give the same warning, and the fact testifies to the reliability of their work above mentioned. Of *Pinus parviflora* there is a notable specimen in the collection under notice. It is distinct and attractive, also interesting, as being the species that the Japanese are so clever in dwarfing and producing toy plants for table decoration; and extensively grown is *Thujopsis dolabrata*, another Japanese introduction that will eventually prove a first-rate hotel plant, as it grows in the absence of direct light as well as does the valuable corridor plant *Aspidistra lurida variegata*, as is proved by a specimen in a pot that when I saw it had been standing on the hall table of Mr. Carter, nurseryman, of Keighley, for seven years; and this experience was turned to account in furnishing a draughty corridor leading to the splendid winter garden of Mr. Isaac Holden at Oakworth, which is described in vol. i., new series, of this Journal—a wonderful garden, in which about 30,000 feet of 4-inch pipes are employed to heat the glass structures, the owner of which was once in a position as humble as anyone who will read these notes. As I have wandered from Belgium to Yorkshire it is time to close, or the printers in Fleet Street will be wishing I had never returned from a tour that was so pleasurable and instructive.—J. W.

ROYAL HORTICULTURAL SOCIETY.

JUNE 9TH.

SELDOM do we see such a varied, interesting, and beautiful floral display as that in the conservatory of the Gardens at South Kensington on Tuesday last, and all the visitors were perfectly satisfied with the Exhibition. The two most popular classes of plants predominated—namely, Orchids and herbaceous plants, but there were many other exhibits before the Floral Committee, which assisted in diversifying the Show. The double stage down the centre of the conservatory was filled with plants and flowers, the side stages being similarly occupied, so that all available space was devoted to the competing and non-competing exhibits, and the general effect was excellent.

ORCHIDS.

A remarkably liberal schedule of prizes had been provided for this Show, no less than £183 being offered in twelve classes, and as the prizes ranged in value from £15 to £1, £10 being offered as a first prize in four classes, it might have been expected that a rather more spirited competition would have resulted. One fact that probably prevented several orchidists from sending their treasures was the late period the Show was to continue open in the evening—viz., 10 P.M., which would necessitate the plants remaining until the following morning, and it is quite likely that had the Show been closed at six several other exhibitors would have entered. A large number of plants were, however, contributed, though there was an absence of the large specimens seen in the north, and there were fewer rarities than at the Orchid Conference recently.

Taking the classes in the order of the schedule, the first was that for a

group of twenty-five distinct Orchids arranged with Ferns, and in those only one exhibitor—Mr. H. James, Castle Nursery, Lower Norwood—entered, and was awarded the second prize for a pretty group, in which *Dendrobium Bensoniæ* well flowered, *Cypripedium superbiens*, *Aerides japonicum*, and *A. odoratum* were the most notable, with a good proportion of Palms and Ferns. An amateurs' and a nurserymen's class was provided for twelve Orchids, and in the former Mr. H. Little, Hillingdon Place, Uxbridge (gardener, Mr. Hill), won the chief position with flowering plants, all healthy and fairly well flowered. *Dendrobium Dalhousianum*, thirteen spikes; *Cattleya Mendeli*, nine flowers of a good variety; *C. intricata*, a supposed hybrid between *C. amethystoglossa* and *Lælia elegans*, with pale greenish sepals and petals and a rich crimson lip somewhat in the style of *C. Leopoldi*; *Cypripedium niveum*; *Aerides Fieldingi*, three branching spikes; *C. barbatum superbum*, twenty flowers; *Cattleya Mossiæ*, twenty flowers; *Odontoglossum Alexandræ*; *Dendrobium Dearii*, twelve spikes of white flowers; *Odontoglossum Roezli*; *Lælia purpurata*; and *Aerides crispum*. The second place was taken by De B. Crawshay, Esq., Rosefield, Sevenoaks (gardener, Mr. S. Cooke), who had *Vanda suavis* with three spikes, fourteen flowers each; *Cattleyas Mossiæ*, *Sanderiana*, and *Warneri*, fine; *Anguloa Ruckeri sanguinea*, *Odontoglossum pulchellum majus*, and *Dendrobium Jamesianum giganteum*, with seven extremely large handsome white-and-orange flowers.

In the nurserymen's class the honours were shared by Mr. J. Cypher, Cheltenham, and Mr. H. James, in the order named. The premier dozen comprised some very beautiful specimens, strong, and flowering freely, several of them having appeared at previous shows this season. *Oncidium sphacelatum* had eight large panicles of its bright yellow flowers; *Odontoglossum vexillarium*, a richly coloured variety with forty flowers; *Cypripedium Hookeræ*, twenty-two flowers; *Cypripedium Lawrenceanum*, forty flowers, fine variety; *Dendrobium Bensoniæ*, extremely handsome, scores of flowers; *Lælia purpurata*, ten spikes of three or four flowers each; *Masdevallia Harryana*, fifty flowers; *Dendrobium thyrsoflorum*, with eight grand spikes, very handsome; *Cattleya Mossiæ*; *Dendrobium Falconeri*, fine variety; and *Cattleya Mendeli*, six flowers. Mr. H. James also had some good plants, which he claims are all genuine specimens, no "making up" having been resorted to. Especially notable were *Brassia verrucosa*, with fifteen long spikes; *Anguloa Clowesi*, with a dozen flowers; *Cattleya Mossiæ*, with thirty flowers; *Dendrobium Jamesianum*, fifty flowers; and *Aerides odoratum majus*, three spikes.

Classes were similarly devoted to six Orchids from amateurs and nurserymen. In the first-mentioned class F. A. Philbrick, Esq., Q.C., Oldfield, Bickley (gardener, Mr. Heims), easily won chief honours with half a dozen beautiful healthy plants of the following:—*Odontoglossum vexillarium*, nine spikes of five flowers each; *Phalænopsis grandiflora*, a spike of fourteen handsome flowers; *Masdevallia Harryana superba*, twenty flowers; *Lælia purpurata*, twelve flowers; *Cypripedium barbatum superbum*, twenty-two flowers; and *Cattleya Mendeli*, six flowers. Mr. H. Little took the second prize, his best plant being *Cypripedium Lawrenceanum*, sixteen flowers, one having a double lip. R. R. Hyatt, Esq., Leigham Court Road, Streatham (gardener, Mr. Luff), was third, having a good *Dendrobium crassinode*. Messrs. Cypher and James were again in the same relative positions for six Orchids, Mr. Cypher showing *Anguloa Clowesi*, seven flowers; *Dendrobium thyrsoflorum*, six spikes; *Cattleya Mendeli*, twelve flowers; *Masdevallia Harryana*, thirty flowers; and *C. Mossiæ*. Mr. James had several healthy plants, the most noteworthy being the small-flowered *Oncidium Suttoni*, which had eight spikes.

There was only one entry with fifteen *Odontoglossums*, although two classes were provided, the leading prizes being each £10. Mr. James won the premier honours in the nurserymen's class, showing well-grown plants of *tripudians*, *Pescatorei*, *Wilckeanum*, *Alexandræ*, *cordatum* and *cordatum aureum*, *nævium majus*, *vexillarium*, *Sanderi*, *citrosimum*, *polyxanthum*, *Roezli*, *album*, and *Alexandræ Lehmanni*. Most of these were excellent varieties.

For six *Cattleyas* and *Lælias* Mr. Cypher secured first honours for admirably flowered plants of *Lælia purpurata*, *C. Sanderiana*, *C. Mossiæ*, *C. Mossiæ delicata*, *C. Acklandiæ*, and *C. Mendeli*. Mr. James followed closely with *Cattleyas intermedia*, *Warneri*, *Mossiæ* and var. *lilacina*, *Mendeli*, and *Lælia purpurata*. In the amateurs' class Messrs. Crawshay and Little were the prizetakers, chiefly with similar varieties and species to the preceding.

Orchid flowers had three classes devoted to them, but, except in one of these for amateurs, there was no competition. Mr. H. James had the only collection of twelve spikes of Orchids, and was awarded the second prize for good blooms of *Cypripediums*, *Cattleyas*, *Odontoglossums*, and *Masdevallias*. In the corresponding amateurs' class Dr. A. Paterson, Bridge of Allan, N.B., was also the only exhibitor, and won chief honours for a most beautiful collection of fresh brightly coloured flowers, amongst which *Epidendrum vittellinum majus*, *Odontoglossum vexillarium*, *Cypripedium Lawrenceanum*, *Lælia purpurata*, and *Epidendrum paniculatum* were especially noteworthy. For six spikes of Orchids Mr. Philbrick was awarded the leading prize, showing handsome flowers of *Cypripedium barbatum nigrum* (a very brightly coloured form), *Odontoglossum vexillarium*, *Cattleya Mendeli*, and *Cypripedium Dominicanum*. J. S. Hodgson, Esq., Lythe Hall, Haslemere (gardener, Mr. Evans), was second, and Dr. Paterson third, all showing good collections, but Mr. Philbrick was easily first.

MISCELLANEOUS.—An important portion of the Exhibition was formed by the non-competing groups from nurserymen, and without them the display would have been deprived of some of its principal attractions. Very remarkable was a grand group of Orchids from Messrs. F. Sander and Co., St. Albans, comprising 200 plants, of which about sixty were *Odontoglossums*, the others chiefly *Masdevallias* and *Cattleyas*, tastefully arranged with Ferns (silver-gilt medal). Messrs. J. Laing & Co., Forest Hill, had a superb collection of Tuberosus *Begonias* of most brilliant colours, scarlet, crimson, orange, and yellow, some of the flowers being of enormous size, as much as 7½ inches in diameter. Both doubles and singles were well represented, one of the best of the former being *Formosa*, of a ruby red colour, the flowers drooping and rendering it admirably adapted for culture in baskets. *Blushing Bride* is a very handsome white single variety with a slight pink tinge, and *Louis d'Or* is a fine double yellow. Scores of other fine varieties were shown, such as we have frequently noted before, and the group well merited the silver-gilt medal awarded for it. Messrs. Hawkins

and Bennett, Twickenham, were awarded a silver-gilt medal for an extremely bright group of scarlet Zonal Pelargoniums of the Vesuvius and West Brighton Gem types, with the pink Madame Thibaut arranged in bands around large specimens of *Adiantum cuneatum*, and with a background of Ivy Pelargoniums. There was rather too much formality in this group and preponderance of scarlet that would have displeased some persons, but it was extremely effective.

Silver medals were awarded to the following six exhibitors. Mr. T. S. Ware, Tottenham, had a most interesting group of hardy plants, comprising a choice selection of Irises, varied in colours and very beautiful. *Cypripedium spectabile* and *Hemerocallis flava* also formed important features in the collection, *Anthericum liliastrum major*, *Pyrethrum*, the rich purple *Campanula glomerata dahurica*, and the free-flowering rosy red *Heuchera sanguinea* being similarly notable. Messrs. Barr & Son, Covent Garden, showed an extensive collection of Carnations, Irises, Pyrethrums, Pæonies, Ixias, *Ranunculus*, and miscellaneous hardy plants, which formed a prominent group near one of the entrances to the conservatory. The Carnations included several excellent varieties, the following being especially worthy of note:—*La Perle*, white, with a narrow red fringe; *Lucifer*, dark scarlet; *Jean Sisley*, scarlet flakes on a salmon ground; *Sunbeam*, bright scarlet; *Peter Barr*, white; and *Alderman Isaacs*, yellow. Messrs. Heath & Son, Cheltenham, had a choice group of Orchids and Ferns tastefully arranged. H. A. Brassey, Esq., M.P., Preston Hall, Aylesford, Kent (gardener, Mr. A. Waterman), exhibited six of the finest specimen *Chrysanthemum frutescens* that have ever been shown, and which amply deserved the medal awarded for them. They were 5 feet in diameter, about 4 feet high, in 12-inch pots, were as even as if they had been trimmed with a shears, and bore some hundreds of flowers. Mr. Evans secured a similar award for a handsome specimen of *Odontoglossum vexillarium* with two dozen spikes of seven to eight flowers each, the flowers large and well coloured.

The collection of Tulips which Mr. Samuel Barlow sent from his garden at Stake Hill, Castleton, Manchester, comprised some sixty flowers and was perhaps the best illustration of the finer kinds of florists' Tulips seen in London for many years. Among the flowers were not a few fine introductions of recent years, and Mr. Barlow's large collection is so complete that if a new variety of promise puts in appearance at any of the Tulip shows it is secured at the earliest possible moment. But most of the blooms were small, wanting at least another week to bring them to perfection; indeed, in the estimation of old Tulip growers, they would have been looked upon as buds, not flowers; having clouded or creamy bases for want of a few more days of growth and bleaching, the green in the outer petals not grown out, and the outer petals shorter than the inner ones. No flower, perhaps, shows so markedly the difference in appearance between a well-grown and perfectly developed flower and the same flower from five to seven days earlier as a Tulip does. The principal flowers in Mr. Barlow's stand were—*Flamed Bizarres*: *Masterpiece*, a fine break of an old variety; *Nonpareil* (Ashmole); *Lord Stanley*; *Dr. Hardy* (Storer), *Prince of Wales*, *Sir J. Paxton*, *Ajax*, *Orion* (Storer), very fine in colour; and a seedling of *Parker's* of great promise. *Feathered Bizarres*: *General Grant* (Hepworth), very fine; *William Wilson*, a noble flower, grandly feathered; *Albert* (Ashmole), *Sir J. Paxton*, and *Masterpiece*. *Flamed Roses*: *Sarah Heady*, *Mr. Bright* (Hepworth), very rich in colour; *Mabel* (Martin), and *Old Aglaia*. *Feathered Roses*: *Modesty*, very beautiful; *Lady Wilton* (Martin), and *Charmer* (Martin). *Flamed Byblæmens*: *Samuel Barlow* (Hepworth), *William Parkinson* (Hepworth), *Friar Tuck* (Slater), *Duchess of Sutherland* (Walker), and *Talisman*. *Feathered Byblæmens*: *Bessie* (Hepworth), *William Bentley* (Groom), *Mrs. Jackson* (Jackson), wonderful for its black colour, black as a raven's wing, darker and more glossy than the once famed *Louis XVI.*; *Seedling 101* (Martin), *Maid of Orleans* (Gibbons), and the *Old Violet Amiable*. Then of *Breeder Tulips* there was a good collection, and they attracted much attention because of their bright and delicate self-colours. Of *Bizarre Breeders* there were *Seedling 27A* (Hepworth), *Excelsior* (Hardy), *Horatio* (Hardy). *Rose Breeders*: *Annie McGregor*, rich rosy scarlet; *Mrs. Barlow*, *Lucretia* (Martin), and *Seedling 16/64*. *Byblæmen Breeders*: *Samuel Barlow* (Hepworth), *Glory of Stakehill*, *Alice Grey* (Walker), *Nimbus* (Hardy), and *Delicata* (Boardman).

The collection was recommended for a silver medal, and first-class certificates of merit were awarded to the following:—*Feathered Rose*, *Modesty*; *Flamed Bizarre*, *William Wilson*; *Flamed Byblæmen*, *Samuel Barlow*; *Flamed Bizarres*, *Prince of Wales* and *Orion* (Storey); and *Flamed Rose*, *Mrs. Bright*.

Bronze medals were awarded to Messrs. Kelway & Son, Langport, and Messrs. Paul & Son, Cheshunt. From Langport was contributed a large collection of single and double Pyrethrums, representing a great number of varieties, one remarkably fine one, *Melton*, being certificated. *Amaryllises*, hardy flowers, and Pæonies were also shown. Messrs. Paul & Son staged a large and beautiful collection of hardy flowers similar to those that have been so much admired at exhibitions recently.

FRUIT COMMITTEE.—Present, Harry J. Veitch, Esq., in the chair, and Messrs. Harrison Weir, S. Lyon, J. Willard, John E. Lane, John Lee, Arthur W. Sutton, William Paul, John Woodbridge, R. D. Blackmore, T. B. Haywood, G. Paul, G. Bunyard, Henry Webb, and G. T. Miles. Exhibits were not very numerous. Messrs. Harrison & Son, Leicester, sent samples of *Hallam's Hybrid Broccoli*, described as a cross between *Couve Tronchuda* and *Broccoli*, the heads of great size and white. Mr. Barron was directed by the Committee to have it cooked, and to report upon it at the next meeting. Messrs. Veitch & Sons, Chelsea, showed samples of *Pingo de Mel Fig*, which the Committee desired to see again, samples of the second crop. Mr. Divers showed a collection of well-kept Apples, chiefly *Claygate Pearmain*, *French Crab*, and *Golden Knob*, and new Potatoes of *Carter's Ashtop Flake*, *Vicar of Laleham*, and *Uxbridge Seedling*, for which a letter of thanks was awarded. Mr. J. Corbett, Fawley Court Gardens, sent a fruit of *Melon Royal Regatta*, a white-flesh variety, which was considered of fair quality. Mr. R. Dean exhibited samples of the *White Chavigny Lettuce*, which has been previously certificated. It was found to maintain its character, and a letter of thanks was adjudged. Mr. E. G. Wiles, Edgcote Gardens, Banbury, showed a *Melon* named *Golden Perfection*, neat in size and form and well netted.

Certificates were awarded for the following:—

Gilbert's Late Queen Broccoli (Mr. R. Gilbert, Burghley Gardens).—A fine form, solid white, and of good size, with strong incurving leaves.

Melon, La Favorite (M. Herrin, Chalfont Park Gardens).—A green flesh variety of moderate size, but excellent flavour, particularly rich and sweet.

FLORAL COMMITTEE.—Present:—Shirley Hibberd, Esq., in the chair; and Messrs. F. R. Kinghorn, Henry Cannell, John Laing, W. Bealby, H. Herbst, James Walker, W. Wilks, John Fraser, Charles Noble, G. Duffield, H. M. Pollett, H. Williams, James O'Brien, Edwin Hill, Harry Turner, H. Ballantine, J. James, Amos Perry, James Hudson, and T. Baines. Messrs. J. Veitch & Sons, Chelsea, exhibited a collection of new and notable plants, several of which were certificated; and of the others *Abelia floribunda*, a Chinese shrub with long tubular rose-coloured flowers was remarkable, as were also the white *Leucobæ Davisia* and the dwarf *Mimulus radicans*, which bears numerous white and yellow flowers clustering amongst the leaves. *Sir N. M. Rothschild*, Tring Park (gardener Mr. G. Hill), was awarded a cultural commendation for a very fine plant of *Cattleya Wagneri*, which has white sepals and petals and a yellow lip. A vote of thanks was also accorded for *Cattleya gigas imperialis*, with richly coloured flowers. H. J. Buchan, Esq., Wilton House, Southampton, showed a plant of the peculiarly tinted orange-red *Masdevallia ignea Boddaerti*. A. H. Smee, Esq., The Grange, Wallington (gardener, Mr. Cummins), showed plants of *Oncidium tricuspidatum*, which was referred to the Scientific Committee, and *Galeandra nivea*, the former a species with small yellow flowers, and the latter with a whitish lip, and a pretty variety of *Lælia purpurata*. A vote of thanks was accorded. J. Day, Esq., Tottenham, sent a plant of *Odontoglossum hybridum Dayanum*, white, tinted purple, and with maroon spots; also a plant of *Cypripedium Godefroyæ*. L. de Rothschild, Esq., Leighton Buzzard (gardener, Mr. Jennings), exhibited plants of the bright yellow self Carnation *Pride of Peshurst*, which is a free useful variety. Messrs. Hooper & Co., Covent Garden, sent a sport from *Croton Evansianus* named *Hooperi*, quite distinct from its parent, with orange-red and yellow leaves, margined with green. Messrs. Cross & Steer, Salisbury, exhibited a pretty diminutive white Pink, named *The Fairy*, the flowers beautifully fringed, pure white, and about 1 inch in diameter. Messrs. J. Veitch & Sons had several fine *Rhododendrons*—*James McIntosh*, rich red; *Princess Mary of Cambridge*, purple; *Mrs. John Clutton*, white; *Kate Waterer*, pink; *Sir Joseph Whitworth*, dark crimson; and *Nero*, purple, being the most notable. Messrs. Saltmarsh & Son, Chelmsford, were accorded a vote of thanks for flowers of *Paulownia imperialis*, fully open, and of a lilac-purple colour; they rarely fully expand upon trees near London, generally falling in the bud. Mr. R. J. Measures, Camberwell, was awarded a cultural commendation for a plant of *Epidendrum vitellinum majus*, with twelve spikes of large brilliant flowers.

Mr. W. Stacey, Dunmow, showed four boxes of *Verbena* blooms, extremely beautiful, all the varieties being of the high merit for which his seedlings are famed. Certificates were awarded for two of them, and the best of the others were *lilacina*, pale lilac; *Hamlet*, scarlet; *Lord Brooke*, scarlet, with a white centre; *Ophelia*, pink; *Purity*, white; *Othello*, dark red; *Orion*, very handsome, rich red; and *purpurea*, violet-purple, with a white centre. Mr. J. Vander Rees, Tooting, showed a large and choice collection of Irises, Pyrethrums, and hardy flowers. Beautiful groups of *Fuchsias* and other plants were sent from Chiswick. Miss Jekyll, Munstead, Godalming, sent flowers of the new shrub *Carpentaria californica*, which has narrow lance-shaped leaves and large white flowers, with a tuft of flowers in the centre. Mr. J. Wiggins, gardener to W. Clay, Esq., Kingston, had a collection of seedling Pelargoniums of the show and decorative types, several being very promising. Mr. C. Turner, Slough, showed three boxes of *Pyrethrum* blooms, and forty-eight blooms of *Maréchal Niel Rose*, exceedingly fine in form and colour. Mr. H. Cannell, Swanley, had a collection of single and double *Tuberous Begonias* of great size and wonderful colours, all the varieties being admirable for decorative purposes.

CERTIFICATED PLANTS.

Tuberous Begonia Marquis of Stafford (Laing).—Very large double variety, rich scarlet, good form.

Tuberous Begonia Lillie (Laing).—A good double form, pale pink, a delicate but clear pure shade.

Pelargonium Vanity (Wiggins).—One of the show decorative type, white, with a dark crimson blotch on the upper petals, and smaller lighter spots on the three lower ones.

Aerides Ballantineana (Sanders).—Twenty plants of this Orchid were shown, each bearing one or two spikes of flowers; the sepals and petals white tinted with purple, and the lip yellow.

Lælia Canhamiana (Veitch).—A hybrid between *C. Mossiæ* and *Lælia purpurata*; the sepals and petals white with an intensely rich crimson purple lip, neatly margined with white. It is a very handsome and distinct form.

Gloxinia Marchioness of Abergavenny (Veitch).—Very pretty, the flowers of excellent form, white, with numerous purple dots.

Chionanthus retusus (Veitch).—A graceful Japanese shrub, leaves elliptical bright green, flowers with four narrow white strap-like petals, in drooping spikes.

Rhododendron Manglesi (Veitch).—A hybrid between *R. Aucklandi* and *R. album grandiflorum*; the flowers are large, white with a few purple dots, very attractive.

Billbergia nobilis (W. Bull).—A handsome Bromeliaceous plant with leaves 4 inches broad and 2 to 3 feet long, green with grey transverse blotches. The spike of green flowers is long and drooping, its principal beauty consisting in the bright rose-coloured lanceolate bracts, which are 6 to 8 inches long.

Verbena Distinction (Stacey).—A pretty variety, white with irregular scarlet stripes.

Verbena Fairy Queen (Stacey).—Pale blush, with a bright red eye; flower large, very free.

Pæony Snowball (W. Gordon, Twickenham).—One of the Japanese varieties; flowers extremely large, pure white, full and globular.

SCIENTIFIC COMMITTEE.—Mr. Loder in the chair.

Dendrobium, malformis.—Dr. Masters reported upon the specimens sent last time. They had two supernumerary labella in place of the two extra usually suppressed stamens of the outer row. He also showed various malformed flowers of *Cattleya Mossiae* and *Lælia purpurata* with more or less regular flowers, some being binary in arrangement.

Lycoperdon, sp.—Mr. Murray pronounced the sp. sent to the last meeting to be *L. caetatum*.

Cucumber, diseased.—He also reported on the Cucumbers sent to the last meeting. No trace of fungus or other cause could be detected.

Lily of the Valley, diseased.—He also reported on these, but the fungus was in too immature a state to pronounce upon it. He proposed cultivating it, and would report later.

Cocci on Apple Bark.—Mr. McLachlan showed specimens, and raised the question as to how these insects, normally sap-loving, could live on dead bark. Mr. Pascoe remarked on the long periods many would exist and thrive though deprived of food.

Scilla, monstrous.—Mr. Boulger exhibited a specimen of *Scilla* having flower buds in the axils of the perianth leaves.

Mercurialis, monocious.—He also showed specimens in which female flowers grew on the lower part and male peduncles on the upper.

Flowers Exhibited.—Dr. Lowe showed a fine spray of *Melanthus major*, *Libertia grandiflora*, *Caccinia glauca*, *Grevillea sulphurea*, *Lychnis alpestris*, *Achillea rupestris*, *Sclerophyllum asphodeloides*. Mr. Loder exhibited five species of *Allium*, white and green-flowered. They were referred to Kew for names; also *A. Murrayanum*.

Aquilegia, cross.—Mr. A. Dean sent a flowering branch of a seedling raised from *A. chrysantha* crossed by a white garden var. It was pink in colour and quite spurless.

Tulip, Pistillody of Perianth.—Rev. G. Henslow showed a specimen in which all the leaves of the perianth had coalesced, forming a thick green pistillate structure open on one side, the free margins alone being petaloid. The proper pistil and stamens were included, but more or less degenerate in character, the former being open down one side with abortive ovules. This monstrosity is described by Dr. Masters ("Teratology," p. 302).

Peas, disease and non-germination of.—The following communication was received from Mr. W. G. Smith:—"Everyone familiar with garden literature must have noticed reports of extensive failures of garden Peas owing to non-germination. The failure is often laid to the weather, and sometimes to the depredations of birds. The seed merchant, too, is often seriously blamed for selling old or dead seeds. All that the planters appear to observe is that apparently sound Peas are planted and very few or none come up.

"I have many times pointed out that parasitic and other fungi often grow inside the pods of Peas and upon the Peas themselves when within the pods. I am convinced that the same fungi commonly invade the Peas and destroy the embryo by gaining an entrance to the interior of the seed by the micropyle. The fungi commonly grow with greater luxuriance round the edge of the micropyle, and on making careful sections the fungoid growths may be easily traced to the radicle and plumule of the germ within the Pea." Drawings accompanying the above showed the relative sizes of the large micropyle and the minute size of the spores and threads.

Morella sp.—Mr. Smith also sent drawings of two species. The one was from Blaydon, near Bristol, and was an enormous specimen of *M. Smithiana*. The other was a small example of *M. gigas* from West Deeping, near Market Deeping. He adds that the species has only once before been found in Britain, and that it sometimes attains dimensions almost equal to *M. Smithiana*—viz., a foot or more high.

Linaria?—Mr. Veitch sent a pot with curiously formed flowers with long spurs growing single on scapes about 4 inches long from the centre of tufts of small spatulate leaves. They were from small bulbs found in the soil sent with *Cephalotus follicularis*. It was sent to Kew for examination.

EUPHORBIA JACQUINIÆFLORA AND POINSETTIA PULCHERRIMA.

THOSE plants that bloom in winter are very much appreciated, as then good flowers are scarce, and the above two are amongst the most beautiful. I have classed them together, as they both require similar treatment. They are generally seen with rather tall stems, and they are then not so well adapted for decorative purposes. The best time I have found to insert the cuttings is the middle of July; if the old plants are started about three weeks previous, they will have abundance of shoots suitable for cuttings, which should be taken off with a piece of the old wood attached. Insert the Poinsettias singly, and the Euphorbias three in a small 60-pot. Place them under a handlight in a close moist heat. When rooted place them in the house, and repot rather firmly into 48-sized pots, employing two parts fibry loam, one of leaf soil, and one of peat, with enough leaf soil and sand to keep the compost open. Place a little charcoal over the drainage, as I find they are rather partial to it. Keep them close till they are established, then harden them off and transfer them to a cold frame close to the glass; remove the lights in the evening, as the plants delight in the night dews. Ventilate the frame freely in the day, and shade from bright sunshine. About the end of September or beginning of October place the plants in a warm, light, airy house, and when the Poinsettias commence showing their bracts give a little liquid manure.—A. Y.

BATH AND WEST OF ENGLAND SOCIETY'S SHOW, BRIGHTON.—JUNE 8TH TO 12TH.

THE HORTICULTURAL TENT AND IMPLEMENTS.

For many years the Hon. and Rev. J. T. Boscawen has been Steward of the horticultural department at the provincial exhibitions of the above Society,

and the taste he has displayed in the arrangement of the contributions has always rendered it one of the most attractive portions to the general visitors. At Preston Park this year a similarly pleasing effect was produced, and was greatly admired by large numbers of persons. The tent was oblong in form, of the usual size, and in the centre contained two elliptical stages with straight stages at each side, except where Messrs. Smith & Co.'s beautiful Clematises were placed. The stages were appropriately draped with a grey cloth, the neutral tint of which served only to show the bright hues of the flowers and the rich green foliage to better advantage.

The first of the groups that attract attention upon entering the tent is that from Mr. W. Balchin, Brighton, which is both extensive and handsome, being composed of a due proportion of flowering and foliage plants most effectively disposed. Large Palms, Crotons, and Ferns formed the centre, in front being a huge healthy and most freely flowered *Statice profusa*; on each side are smaller groups of *Lilium longifolium* and *Harrisi* that are especially well grown at Mr. Balchin's, Cliftonville Nursery. *Acalyphas*, which are another speciality, are similarly conspicuous; *A. musaicus*, *A. marginata*, and *A. Macafeeanus* being the chief favourites, and these are richly coloured. In the opinion of many the numerous plants of *Leschenaultia biloba major* in this group constitutes one of its principal features, and certainly the brilliant blue of the abundant flowers is unequalled by any other plant in the tent. This is a charming greenhouse plant, and it is surprising that it should be so much neglected in gardens, for it is rarely seen. Pimeleas, Orchids, Adiantums, with many other plants, all well grown, are also shown in this group.

At the left-hand side when entering is seen a row of about a dozen specimen Clematises from Messrs. Smith & Co., Worcester, and which, although only of moderate size—namely, 4 feet in diameter—they are evenly trained in globular form, and so freely flowered that better examples could not be desired. The varieties were carefully selected, the most distinct being represented, including several of exceptional beauty, amongst which may be mentioned two handsome double forms—*Enchantress* (white) and *Venus Victrix* (delicate lavender tint). Both have full, large, and finely formed flowers. Other notable varieties are *Grand Duchess* (white, rose tinted), *Sensation* (rich mauve), *Lady Caroline Nevill* (blush white, with lilac bars), *Fairy Queen* (blush, with a pink bar, flowers large), *William Kennett* (lavender blue), *Gloire de St. Julien* (white, mauve tinted), and *Anderson-Henryi* (cream white). With the exception of the two doubles named first, which belong to the Florida group, these Clematises are all of the lanuginosa section, and are distinguished by the great size of their flowers.

The magnificent group of Rhododendrons, which forms an imposing bank at the end of the tent, is contributed by Messrs. J. Cheal & Sons, Crawley. The plants are vigorous, and bearing handsome compact heads of variously coloured flowers, some being exceedingly bright. The well-known *John Waterer* is very prominent amongst them; but one of the brightest is *John Walters*, a rich rose red, the flowers of moderate size, but in very neat heads. A distinct and beautiful variety is *Sigismund Rucker*, of a rose-crimson colour, with a black blotch on the upper petals, and numbers of others could be similarly mentioned. A very careful selection of the best varieties has been made by Messrs. Cheal & Sons. Smaller groups of hardy Azaleas from the same firm brightened the corners of the tent.

J. Warren, Esq., Handcross Park (Mr. Rann), brought a number of the large specimen plants that have gained him so many honours at exhibitions around London. Azaleas, Crotons, Palms, and miscellaneous stove and greenhouse plants, which we have frequently had occasion to notice, constituted a highly effective bank in the centre of the tent upon the second stage, corresponding to that occupied with Mr. Balchin's plants.

Messrs. John Laing & Co., Forest Hill, had on the earlier days of the Show a bright and pleasing group of Tuberous Begonias, representing some of the superb varieties raised by this firm in recent years. Particularly good were the following singles:—*Her Majesty*, white, pink edged; *Marchioness of Bute*, white centre with a rose margin; *Torey Laing*, orange yellow; and *White Perfection*, very pure and beautiful. All these have the broad rounded petals characteristic of the improved type that has rendered this firm so famed for Tuberous Begonias. Two distinct double varieties were *Lady Halse*, white and crimson, very free; and *Fireball*, deep glowing red, exceedingly profuse. The brilliant scarlets and yellows of this collection imparted a welcome brightness to the tent that was much appreciated.

Outside but near the large tent is a most interesting exhibit from Messrs. J. Cheal & Sons that has received much attention from the horticultural visitors. This is a collection of cordon fruit trees, showing the oblique, diamond, and vertical mode of training, and proving how well adapted such trees are for small gardens. A contrivance was also shown for protecting such trees from spring frosts. The rows of trees are about 2 feet apart, and are trained to wires stretched between two posts. The upper parts are connected by bars of wood, over which can be rolled tiffany or other suitable material, and this can be similarly allowed to fall over the sides. Protection is thus afforded from frosts or birds, as may be desired.

Liberal prizes were offered for collections of fruit, Strawberries, and groups of Orchids, but the exhibits arrived late, and we have only received the following intimation as to the winners just as we were going to press. Collection of fruit—First, Mr. Waterman, gardener to H. A. Brassey, Esq., Preston Hall, Maidstone; second, Messrs. T. Rivers & Son, Sawbridge-worth; third, Mr. R. Miller, Shoreham. For two dishes of Strawberries—First, Mr. Vert, gardener to Lord Braybrook, Audley End, with James Veitch very fine; second, Mr. Waterman.

For Orchids the first prize was taken by Mr. Meachem, gardener to J. Armstrong, Esq., Withdeane, Brighton; second, Mr. Martin, Blackstone, Hurstpierpoint, Sussex; and third, Mr. Townshend, gardener to Capt. Townshend, Dyke Road, Brighton.

APPLIANCES, IMPLEMENTS, &c.

A number of the leading horticultural builders exhibit houses and samples of glazing, ventilating apparatus, and various appliances. Messrs. Foster & Pearson, Beeston, Notts, show several handsome useful houses constructed in their best style, and fitted with simple and effective modes of ventilating. Some examples of their silver medal frames, the merits of which are now so generally recognised. Messrs. Wright & Holmes, Moseley Road, Birmingham, have samples of houses, glazing, and ventilation,

very effective and commendable. Messrs. W. Richardson & Co., Darlington, exhibited a number of houses and frames, the former fitted with convenient lantern tops. Several good portable frames, the useful glass wall protectors, and examples of their approved modes of ventilating. Messrs. Ransome, Sims, & Jefferies, Ipswich, showed their new automaton lawn mowers. Mr. J. Matthews, Weston-super-Mare, showed samples of pots and ornamental vases, baskets, &c. Messrs. Edgecumbe, Rendle, & Co., Victoria Street, have vases illustrating their well-known system of glazing, and Mr. B. Edgington, 2, Duke Street, London Bridge, S.E., had a number of tents, marquees, &c.



KITCHEN GARDEN.

Peas.—William I. is still one of the earliest; we have it now in good condition. Ringleader, sown at the same time, will not be ready for a fortnight. The American Wonder is very early, but so dwarf that it gives no succession of gatherings. Kentish Invicta is some days later than the first-named above. We have ceased to regard Sunrise as an early Pea. Some rows we pinched the points from as soon as the flowers began to open have filled their pods a week before those which were allowed to grow. This pinching is decidedly of advantage in advancing early Peas, and it also assists the monster-podded sorts, such as Giant Marrow and John Bull, to fill their pods, and is usually practised with those that win prizes. Growers should note the varieties of early Peas which serve them best, mark down any great advantage or mistake they have experienced, and be guided by this in coming springs. Second earlies must have attention. Take the points out of them if they are late, and give water freely in dry weather with a mixture of guano. Dissolve a handful of this in every 4 gallons of water, and the crop will be greatly benefited by it. Sow more seed of Omega, Sutton's Latest of All, or Ne Plus Ultra.

Broccoli.—This is nearly over, but it has been a good Broccoli season. Of late we have only been cutting one sort; this is Sutton's Late Queen, which is valuable. The first of the heads began to appear about the end of April, and we have them turning in still. They are compact, white, and of the finest quality. Plants still remaining in their quarters may be lifted with good balls of soil and be put into any out-of-the-way corner until the heads are cut. This will allow their quarter to be used for another crop.

Planting Out.—We will not stop this work now until the whole of our Winter Greens are out. Brussels Sprouts, if not planted until now, will not gain any great size; they require a long season. The planting of Savoys for autumn and winter use should be completed at once. Gilbert's New Universal variety is being grown largely this season. Many of the Broccoli and all the Cauliflowers have been planted. Those which were dibbled in a few inches apart some weeks ago were lifted and planted with a trowel, but those growing close together were drawn up and planted with a dibble. We dip all the roots in a paint-like mixture of earth and soot, and find it a capital grub-antidote and a fertiliser as well. Lettuce are being put out in large quantities. By planting some in a south and others in a north aspect, we get a long succession without frequent or extra sowings. The Leeks have all been put out. A few spring Onions have been pulled up and put into blanks. They transplant very well, and so do Parsnips. Beetroot and Salsafy may also be transplanted into blanks which have occurred. This work should all be done, if possible, when it rains, as the plants then grow freely.

Endive.—Sow a pinch of the Broad-leaved Batavian. It is a superb sort. A row about 2 yards in length will furnish many plants, and unless early salads are wanted sowing may be deferred for a time. Early plants are almost sure to run to flower prematurely, and this is why we do not sow extensively until the end of July or August.

Broad Beans.—Sow more of these. They cannot have too strong soil. Pinch the points off those in full bloom. The crop will come earlier and be all the better for it. We never allow any of our Broad Beans to go higher than 2 feet. Where very large pods for exhibition are desired water very freely with strong liquid manure.

Tomatoes.—The whole of these may now be planted out. Give them the warmest position available. Take up one or two leading shoots from those planted some time ago. Pinch off all side growths and a good crop of fruit is sure to form. Plants which have been fruiting freely under glass and now exhausted had better be replaced with young ones. If young plants are scarce take cuttings from the old, and they will be rooted and ready for planting in a fortnight.

Weeds.—These are now very troublesome, and require much attention to keep them down. The hoe is the gardener's friend, but it is of no use in wet weather, and then in particular an effort should be made to hand-weed, especially in the case of weeds which are likely soon to flower. Many are very particular in having their gardens clean and free from weeds at planting time, but they neglect them afterwards, and this is a great mistake, as it is now they injure the crops and perpetuate their obnoxious stock.

Kidney Beans.—Our first-sown Canadians had some cold weather to contend with, and at present they are quite yellow in the foliage and later than another lot sown ten days afterwards. We think of pulling up the first and sowing more, as the second lot will give us an early supply

and we have never found it profitable to allow an inferior crop to go on and take up the ground during the best part of the season.

FRUIT FORCING.

VINES.—*Early House.*—As soon as the crop is cut the inside borders should receive a thorough supply of tepid liquid manure, and the Vines should be syringed in the afternoon until the foliage is free from dust or insects, an occasional syringing being all that is afterwards required to keep it clean and healthy. The ventilators may remain constantly open. When the Vines make fresh laterals an even growth should be encouraged over every part of the house by pinching out the points of those that show signs of becoming too gross, and so depriving the weak parts of the food necessary for the proper support of the buds that are to give next year's crop of Grapes. The growths should be prevented from interfering with the principal leaves, as these are essential for the proper development of the buds at their base.

Late-keeping Grapes.—By this time all these should be set, and as they swell rapidly at this season thinning must be completed without delay. Choose medium-sized and tapering bunches in preference to those with shoulders for hanging through the winter, and thin out the berries with a liberal hand. Continue to allow a judicious extension of the laterals as far as space admits, and see that there is no deficiency of moisture in the borders, which, as the demands of the foliage will now be considerable, must be kept thoroughly moist, and the roots active by a surface dressing of good short manure kept moist by frequent dampings; but these last must not take the place of waterings, which should be given thoroughly whenever required. Clear tepid water passing through a mulching of short manure will be sufficient for vigorous Vines not carrying heavy crops, but those showing signs of enfeeblement or carrying full crops should have some nourishing food—liquid manure in a tepid state.

Grapes Scalding.—Lady Downe's and some others that are liable to scald when passing through the stoning process must be closely watched until the danger is past, which is usually the case after the Grapes change colour. Although sudden outbursts of sunshine with the sun acting directly on the berries may accelerate the disaster, yet it is not the cause, as we see scalding when the berries are shaded by the foliage. The chief cause is a deficiency of ventilation, especially in the early part of the day, so as to have the surface of the Grapes dry before the sun acts powerfully upon the house. The best preventive is to keep the house rather warm by night with sufficient ventilation to insure a circulation of air and prevent the deposition of moisture on the berries during the night, then ventilate freely early in the morning.

Young Vines for Early Fruiting Next Season.—These would be started early, and ought to have filled the trellis with laterals, and should now to be kept cooler and somewhat drier, especially at night. Ventilate freely through the early part of the day, and close with sun heat early in the afternoon, and before nightfall admit a little air. If growing in inside borders, as they ought for early forcing, see that they are well mulched and thoroughly watered as a means of keeping the roots active near the surface, and prevent them striking down in quest of moisture. Young Vines in pots intended for a similar purpose will require similar treatment so soon as the young canes begin to change colour for ripening.

FIGS.—The fruit from small trees is poor as compared with that from trees established in large pots—viz., No. 1 or 18-inch. They then bear abundantly and over a lengthened period, or from the close of April to early June fruit may be gathered successively, whilst trees in smaller sized pots do not give a great quantity, and the season is soon over. The second crop will be considerably advanced when the first is over, as it will by this time, when the trees should have a thorough cleansing, a syringe answering better than the garden engine, as every part of the foliage can be brought under the action of the water.

Succession Houses.—The directions given for the early house from time to time will apply to these now, with the difference that as the days are longer the heat and moisture may be increased; and as the season advances attend to tying and stopping, carefully guarding against laying in too much wood, encouraging no more than can have full exposure to light and air, which are essential in securing short-jointed fruitful wood and fruit of high colour and quality. Inside borders will require watering at frequent intervals, as the borders being properly constructed there is no fear of overwatering, and the mulching must be kept constantly moist to cause and keep a plentiful supply of feeders in activity near the surface. Ventilate all Fig houses freely through the early part of the day, as there is nothing like early ventilation for securing firm short-jointed growth, and close early so that the temperature may rise to 90° or 95°, admitting a little air about 6 P.M., and under favourable circumstances there will be little, if, indeed, any need of artificial heat at this time of the year, except in the case of fruit ripening in a dull cold period, when gentle heat will be necessary to ensure a circulation constantly of rather dry warm air. Early closing means health to the trees and the saving of fuel, as late closing necessitates fire heat to prevent the temperature falling too low through the night.

PLANT HOUSES.

Allamandas.—For the present these should be grown fully exposed to light and sunshine, as if shaded their shoots lengthen some distance before they show signs of flowering. Any shoots that display this tendency must be pinched back, and they will soon break into growth again and show flowers. If the plants are trained upon a balloon or other trellis the shoots should not be tied down closely, but left until the whole

of them show flowers. Plants that have commenced flowering may have the soil top-dressed with cow or other manure if the pots are full of roots and liberally supplied with weak stimulants every time water is needed.

Stephanotis floribunda.—The earliest plants should be growing freely and developing flowers near the base of the young shoots. If the blooms are cut as they expand the plants may be syringed liberally to keep them perfectly free from insects. If trained to wires beneath the roof constant attention is needed in keeping the growing shoots tied, or they soon twine themselves securely to the wires, and are therefore very difficult to take down when required either to clean them or wash the wood-work and glass of the house. If the plants are grown upon a trellis when a good quantity of bloom is showing the growth, if trained to thin cord as previously directed, may be carefully taken down and trained evenly upon the trellis, and when this is done growth can be retarded by removal to a cooler temperature, or pushed forward into bloom by extra heat. If the pots or borders in which the plants are growing are full of roots feeding may be resorted to every alternate time water is required. Grow the plants fully exposed to the sun, to solidify the shoots as made, for if shaded the plants will grow vigorously enough, but they fail to flower satisfactorily.

Clerodendron Balfourianum.—Plants forced early will have done flowering, and every attention must be given to encourage luxuriant growth for another season. If grown upon trellises secure thin cords from the trellis to the roof, and train the growing shoots to them. Feed the plants liberally, and give them abundance of heat and moisture. Those required in bloom may be pushed forward as rapidly as possible in a close heated structure, and in a very short time they will develop their useful and beautiful flowers. Plants intended for conservatory decoration if fairly well advanced in growth may now be brought forward into bloom in an intermediate structure, for when finally developed under these conditions they stand better and last considerably longer than when forced in strong heat. Young plants rooted as early as cuttings could be obtained will be extending their growth very fast, and should be placed into 6 and 7-inch pots without delay. The plants should afterwards be trained under the roof of a plant stove, where they can enjoy plenty of heat, moisture, and light; moderate shade during bright sunshine will be beneficial until growth is completed. For training round four or five stakes for the conservatory or the decoration of any structure plants in the size of pots named are very useful.

Gardenias.—Young stock grown on from cuttings last summer and wintered in small pots will, if they have been potted, be grand bushy specimens in 6-inch pots. These if placed at once into 8 and 9-inch pots and pushed on in a warm moist house will make plants before the end of the season over 2 feet through, and will yield for spring flowering a large quantity of very fine blooms. Plants rooted early in the year should be placed into 6-inch pots, and the shoots pinched from time to time as may be required to form bushy shapely specimens. Old plants for autumn and winter flowering that were not cut back after flowering may also be given a small shift if their pots are well filled with roots. Plants pruned hard back and reserved for flowering again must be started as rapidly as possible, pinching any shoots that have a tendency to take the lead. Use the syringe freely twice daily, and with force, for this is the best means of keeping the plants free from mealy bug. These plants do well in a mixture of fibry loam three parts, the remaining part being composed of decayed manure, leaf soil, and sand, or they may be grown in equal proportions of peat and loam, with a little sand added.

Nepenthes.—Any plants that are running away without showing pitchers freely should be cut closely back without farther waste of time. Plants subjected to this treatment will quickly break again into growth at this season of the year, and will pitcher again freely and continue to produce them again for a long time. The stems removed can be cut into lengths of two joints, and inserted singly in small pots in sphagnum moss and coarse sand. These if well watered and then plunged in a close frame where the heat is brisk will soon form roots. Cuttings of these plants root freely if kept moist and well shaded. The syringe should be used freely, and abundance of water given to plants in vigorous growth. All who admire these plants and do not possess *N. Mastersiana* should obtain it, for it is unquestionably the finest and most distinct variety in cultivation.

THE BEE-KEEPER.

SPREADING BROOD.

In imparting instruction in the mysteries of any science it must always be remembered that there is an inner and outer circle of students, and that what would be excellent advice when given to the one would be quite the reverse if given to the other. Every gardener knows that if he wishes to have fine blooms of Chrysanthemums he must stimulate his plants by giving them large supplies of manure at the right time, but if he began feeding before the plants had filled their flowering pots with roots the result would be simply disastrous. So with stimulating bees by spreading brood. If this is done at the right time and the right way

the result is astonishing; if not, ruin. With our advanced knowledge in bee-keeping we are giving the bees an ideal school-board education. We have taught them to use wax foundation, and so economise their labour. We have taught them to store their honey in the convenient sections instead of the unwieldy supers of the past, but we have failed to teach them how to convert the product of sulphuric acid and old pawn tickets into genuine honey, nor are we sanguine that all our efforts will enable the bees to hatch out young workers much under three weeks.

The advocates of spreading brood have not been so far left to themselves as to imagine that this will be the result. What they contend is, that given two hives, one of which is left to its own devices, and the other having its brood carefully spread, at the end of a month or so the latter would be much the stronger, though there was nothing to choose between the two at the outset.

The necessity for this operation depends entirely on the season of the honey glut. In those parts of Great Britain where the harvest is late in the summer or autumn it is useless to begin stimulating in the spring or early summer; but in those parts of the south of England where the harvest is carefully gathered from fruit blossoms early stimulation is our only chance of getting any honey at all.

It is useless attempting this much before April, and not so early as this if the weather is at all unfavourable. The reason why so many fail and so few succeed is that proper precautions are not taken nor the necessary steps followed, and so we make no apology for repeating an oft-repeated tale, in the hope that in the future the failures may be fewer. About the end of March we select a fine sunny day when the bees are flying out of the hives and welcoming the advent of the real spring time, and thoroughly overhaul our hives.

We remove all those combs which are not wanted, and move up the division boards so as to confine the bees to as many frames as they can cover. The very fact of disturbing the hives stimulates the queens to increased activity in laying, but we usually uncap a few of the closed honey cells to supplement their efforts. At the end of a week or so, again choosing a warm day, we examine the hives and note their progress. If brood-raising is going on satisfactorily we take the outside combs with the least brood, and carefully place them in the centre of the brood nest, but not side by side. In order to prevent any chilling of the brood we commence feeding gradually to keep up the heat of the hive, and do not attempt to put in any empty comb or foundation until the bees are cramped for room, when we place these at the outside of the brood nest, and when these are used for brood follow the same plan as above.

The reason why spreading brood has met with such unmerited obloquy and such deserved failure in many cases is due to the fact that the rationale of the process is too often forgotten, and that on the supposition that if little is good much will be better, the brood is spread unduly, with the natural result—failure. We have far too often seen hives ruined by injudicious spreading, a bar of foundation put right in the centre of the brood nest, several combs at either side with no brood and very few bees, and the division boards either at the extreme ends or absent altogether.

If, as so often happens in our much-abused climate, we have winter in the middle of summer, the bees at once curtail the brood nest, and we should supplement their doing so by removing all the combs which they are not covering, and if there is any brood in them they should be at once put in the extractor and melted down. By this means we have often rescued a hive from foul brood which on the fixed system would be nearly impossible, as, if the combs are cut out, the want of division boards only partially remedies the evil.—A SURREYSHIRE BEE KEEPER.

DEATH OF THE REV. HERBERT R. PEEL.

WE see with regret the death announced of this gentleman, who was found in his study of Thornton Hall, Buckingham, on the 2nd inst., dead

from a gunshot wound. Mr. Peel was no doubt well known to many of our readers as the Honorary Secretary of the British Bee-keepers' Association, a body which he spent much of his time and substance in organising and supporting. *The Standard* says: "The deceased having been missed from luncheon, and the door of the study being locked, entrance was effected by the window, when the rev. gentleman was found lying on the hearthrug shot in the left breast with a double-barrelled gun at his feet, one barrel of which had been discharged, it is supposed, with the aid of a poker which was by the side of the deceased. Death must have been instantaneous. The deceased had suffered greatly from gout in the head and eyes. The jury returned a verdict to the effect that death was caused by a gunshot wound, but there was no evidence to show how it was inflicted." Mr. Peel was a son of the late Dean of Worcester, and a nephew of Sir Robert Peel, the eminent statesman.

HONEY SIXPENCE A POUND.

THE competition daily gaining strength in apian produce necessitates careful consideration of the question of profitable bee-keeping, and this is the more disappointing in that hitherto it has only been necessary to point out to the ignorant the means whereby the greatest quantity and the finest quality of honey could be gathered at the least expenditure of time and labour. The result of these attempts is now evident, for the vast increase in production has resulted in a continual lowering of prices, until now we are confronted with the startling revelation that in the near future honey sold in wholesale quantities cannot be expected to realise any greater prices than 6d. or 7d. a pound. Worse still is the knowledge that a good season or a bad one can hardly have any appreciable effect upon prices, as the continual import of foreign honey from America and other more fortunately situated countries than England in regard to climate, if the annual product of honey be the only point considered, will effectually prevent any very great fluctuation of prices even if home produce amounted to only a few tons of good quality. This being the case, there seems to be no other course open to apianians than after holding out for the largest price which can reasonably be expected to sell at the price offered, and then to consider whether taking the expenditure both in time and money into consideration in the face of these adverse combinations against bee-keeping it is wise to advise others to begin to study an art which is already almost worked to death by the merciless driving of the competition system, on which modern commercial enterprise seems mainly to rely.

In the good old halcyon days, when honey realised 2s. 6d. a lb. without any trouble or difficulty in disposing of it at that price, one might well say that if they did not show their neighbours how to eke out their savings they would be acting a part at once unkind and dog-in-the-manger-like. Now all this is changed. The mine is giving out, the seams of gold still lie exposed to common view, but no trouble is now bestowed upon the working, for the gold when extracted is a glut upon the market. The better principle to act upon is, if an individual is persuaded in his own mind that the days of profitable bee-keeping, days of 50 and 60 per cent. profits are over, and 4 and 5 per cent only can now be maintained, to advise no one to become a bee-keeper without first enlightening him as to the low price of honey and the trouble he will have in disposing of it when produced in large quantities. The greatest difficulty in the matter is that there is a limit, and one that has often been attained, in the amount which can possibly be taken from one single stock. In that way nothing more can be expected, unless by the use of the extractor, an instrument extracting brood, pollen, and not properly ripened honey in one mess, worthy of the days of the old skep supremacy.

Large hives are used already by enlightened bee-masters, and it is questionable if larger can be used with a proportionate success to the space afforded, for the laying powers of the most fertile queen are heavily taxed by a 20-inch Pettigrew skep. There is one help to bee-keeping of a valuable and undoubtedly useful kind, in that it saves an immensity of toil to the bees, and honey to their masters. The use of comb foundation is one of the real benefits conferred upon all the fraternity of beeists by the advanced section, all other helps fade in the face of it and become dwarfed by its side. There are many very ridiculous theories, some call them facts, concerning the amount of honey necessarily used in comb-building. Scientific men talk of 20 lbs. of honey being used to form 1 lb. of wax. One proof that such a theory is false can be adduced briefly and concisely. If 50 lbs. of syrup made in equal proportions of sugar and water be given to 7 or 8 lbs. of bees in a 20-inch Pettigrew skep in autumn, in about a fortnight the hive will be full of comb and brood, and will contain honey sufficient to carry it through the longest English winter. In such a hive there is considerably more than 2 lbs. of comb, and this is satisfactory proof when the amount of syrup consumed by brood is considered, the amount necessary to winter a hive successfully and well, and the waste, for there must be some, is deducted to prove irrefutably that nothing like 20 lbs. of syrup is requisite to the formation of 1 lb. of comb, and as syrup cannot be equal in its properties as the main ingredient of comb to natural honey, so no other clearer demonstration of the falsity of the above widely disseminated theory seems necessary.

The use, then, of comb foundation is one means of increasing the honey yield, and it is probable that as greater difficulty is gradually experienced in selling comb honey, ekes, and nadirs, and large supers from which one-third greater weight of equal quality to that from sections can always be taken, will once more come into vogue as the most profitable means, being least expensive and troublesome, of taking honey for the market. The principles of management to secure the best return in the present

unfavourable state of prices had better be considered more fully and in detail on some future occasion, but it may not be here out of place to express the certainty with which many look forward to the time when they will be able to use honey, not as a luxury, but as a necessary, means, of course, that being reduced in price it will be in reach of all. No doubt such a result is pleasant in the eyes of the consumer, but whether he will be really benefited by such a reduction is more than questionable. Honey can be produced by many artificial ways, equal in the eye of any but a connoisseur to the most limpid nectar of the finest of our flowers, from the lordly Sugar cane and the lowly Bect. Such a course cannot be too severely deprecated, but as surely as a fictitious cheapness renders honey not worth the trouble of production, an adulteration will take the price of the real article.—FELIX, *Cheshire*.

INDUSTRY OF BEES.—Few people have any idea of the labour that bees have to expend in the gathering of honey. Here is a calculation which will show how industrious the "busy" bee really is. Let us suppose the insects confine their attentions to Clover fields. Each head of Clover contains about sixty separate flower tubes, in each of which is a portion of sugar not exceeding the five-hundredth part of a grain. Therefore, before one grain of sugar can be got, the bee must insert its proboscis into 500 Clover tubes. Now there are 7000 grains in a pound, so that it follows that 3,500,000 Clover tubes must be sucked in order to obtain but one pound of honey.—(*Irish Farmers' Gazette*.)

TRADE CATALOGUE RECEIVED.

Ant. Roozen & Son, Overveen, Haarlem, Holland.—*Catalogue of Cape and Dutch Bulbs.*



* * * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Pears Destroyed by Grubs (*H. W. G.*).—The young fruit you enclose are infested by the grub or maggot of a small fly, probably belonging to the genus *Sciara*, but the exact species can only be determined by rearing the perfect insect. There are a number of flies, mostly very minute, which attack the blossoms and fruit of the Pear, belonging to the genus *Sciara* and *Cecidomyia*; in some instances as many as twenty of their maggots may be turned out of one fruit. They pursue different methods, and even the same species varies its plan in some seasons. The attack may be made upon the blossom in such a manner that it withers off, and the fruit is not formed; at other times, as in the examples you send, the young Pears, soon after they have set, begin to shrivel and decay; and it also frequently happens that the insects live on without at first destroying the vitality of the fruit, but at length it succumbs, and generally falls unripened. There is no apparent reason why wall trees should be less liable than standards. We fear it is difficult to suggest a remedy, the process of catching such tiny flies in the act of depositing eggs would be a very tedious one. Prompt removal and burning of all blossoms or fruit seen to be infested appears to be the only plan.

Exhibiting Vegetables (*A. B.*).—As you do not describe the nature of the Show, whether it is for representing produce suitable for cottagers' families or for the tables of the affluent, we can only advise you to stage the very best examples of culture you possess. If all are alike good we should exclude the Cabbages and Lettuce from a collection if the Show is of the last-named character; but if of the former we should include these and exclude something less substantial. As a rule, however, it is wise to exclude a faulty dish, whatever it may be, if one as near perfect as possible can be substituted. If you act on that principle you will not be far wrong. Guano is sold by most vendors of soils and garden requisites, such as Messrs. Herbert & Co., Hop Exchange Warehouse, Southwark; Kennard, Swan Place, Old Kent Road; and Ward & Co., 7, Wormwood Street, E.C., who have recently advertised in our columns, and whose names we mention alphabetically.

Cyclamens not Growing (*C. P. L.*).—There is no disease in the corms sent. The seedlings have been kept too dry at some time, either at the roots or in the atmosphere. If they have been on a shelf and not shaded the sun has extracted the moisture from the leaves faster than a supply has been afforded by the roots for maintaining growth. A warm humid atmosphere is requisite for growing seedling Cyclamens without check, and the pots should stand on a moist base, not a dry shelf. When the plants grow vigorously there is almost invariably a film of water between the inner and

outer cuticles of the foliage, but when the leaves are perfectly dry, as those are on the plants sent, growth soon ceases and the combs go to rest prematurely. We should pot them deeper, or at least shade them from the sun, and so arrange them that moisture rises from the base. You may also increase the temperature 5° or 10°, provided you afford more moisture in the atmosphere, and at the same time never let the roots get anything like dry. The Briar spray sent is infested with the orange fungus, for which we doubt if there is any "easy and certain cure." Try a solution of softsoap (2 ozs. to the gallon of water), adding sulphur, so as to form a thin creamy mixture, which apply with a syringe or small brush; or you might try Ewing's mildew composition, which, being ready for use, would be an "easy" method.

Grapes Setting (Williams).—The Grapes are very well set indeed, and the bunches should be thinned without any delay that can possibly be avoided, first removing all the smaller berries wherever they may be placed, then an excess of the larger, as there are ample of these, at least in the examples before us, for producing full bunches. The pale green colour of the footstalks and their want of substance indicate that the house is kept too close and moist. Admit more air, or at least admit it very early, and employ less atmospheric moisture, especially late in the afternoon, and the Vines will be benefited while the plants will sustain no injury under an intelligent course of treatment; but adopt no sudden changes in management, such as going from one extreme to the other, or you may make a mistake.

Sulphur and Lime Preparation for Mildew—Quassia Water (Northants).—No doubt the receipts you have seen given in this Journal for making quassia water are all quite safe and good. We find an ounce of chips gently boiled for a time are sufficient in a gallon of water for destroying the ordinary green fly on Roses, but have used twice the quantity of quassia with a solution of softsoap for the black, which has not done the slightest injury to the growths to which it was applied. We always consider it prudent to try the effect of a mild solution of any insecticide in preference to a stronger, which is only resorted to when the former is not effectual. You had better do the same. You ask if the lime-and-sulphur remedy (which is reproduced in answer to another correspondent) is reliable. We have seen it used more than once with perfect safety to Peach trees and Roses, as it did not injure them in the slightest; but we have heard of its having proved injurious. We are not able to account for this. The water may be the cause, or some fault in preparation, or, again, syringing with the mixture in the morning when the sun reached the trees before the foliage was dry. We advise you, if you try the remedy, to use rain water, and proceed cautiously and experimentally, applying the preparation at night, at first trying half the quantity advised on a branch or two that you can afford to injure. We repeat, however, that we have seen it used exactly of the strength recorded extensively, both under glass and in the open air, with complete success.

Pear Tree Leaves Blistered (J. G., Ayrshire).—There is nothing left of the moth which you have enclosed; it seems to have withered to nothing. The leaves, however, suggest that your trees are attacked by a small moth (Tinea clerckella) of which we append a figure. Every gardener must have observed the leaves of his Pear trees, especially those of the Chaumontel, blotched with dark brown spots in the autumn. We had a standard tree of



Fig. 120.

this variety that annually was thus injured, whilst a Swan's Egg and an Easter Bergamot close by were comparatively untouched. These brown blotches are caused by the caterpillars or grubs of a very small moth called the Pear-tree Blister moth. The caterpillars of this moth belong to a family called "miners," on account of their working beneath the skin of the leaves they attack, feeding only on their pulp. The red spots often seen on the leaves of the Vine and Turnip are caused

by grubs of this habit. On opening one of the brown blisters on the Pear tree leaf a small, active, shining grub will be found, fleshy, yellowish-white, hairy, and with sixteen black feet; the head and a line down the back are brown. When thus disturbed the grub lets itself down towards the ground by a silken thread. It forms its cocoon in the earth, or beneath some withered leaf upon its surface. From this cocoon the moth comes forth chiefly during May, though it has been observed at the beginning of April. In the drawing the grub and moth are represented of their natural size, and the moth magnified. The upper wings are orange, with a silvery spot on its outer edge and a mingling of black, lilac, and pink on the inner angle; an orange feathery mark and four black lines mark their upper surface, and they have a white fringe around them. The hind wings are narrow, lead-coloured, and fringed. The best mode of prevention seems to be to collect the leaves, and to pare off about an inch of the surface round each tree in the autumn, and to burn them.

White Clover (H. Von P. Contich).—There is only one species of White Clover, and it flowers profusely in suitable soils and positions. The scil in Belgium appears well adapted for Clover, at least we have seen many fine examples in some districts; but though White Clover might grow luxuriantly in your soil it would not flower profusely if materially shaded by fruit bushes; and, moreover, it would probably injure the bushes by impoverishing the ground. In reply to your other query our answer is that the gentleman to whom you allude might possibly do what you suggest, but we are not sure about it. You had better write fully your proposals and desire to us, and your letter shall be forwarded, enclosing your card, for insuring a properly addressed reply.

Mildew on Grapes (D. C.).—We are sorry to see the fruit so seriously infested. Judging by the wood and foliage the Vines appear to have been well managed; yet we suspect the house has been kept closed too long on some particular morning, and the atmosphere too moist. There is nothing that can destroy the mildew without some "marks" being left, because the mildew itself injures the cuticle of the fruit. You say you have tried Fir-tree oil and sulphur without good effect. Have you tried Ewing's

mildew composition? The following preparation has been found effectual in destroying mildew on Peach trees and Roses, but we have not seen it tried on Grapes. You might try it on a bunch or two in varying strengths and favour us with the results. Take a pound of flowers of sulphur and a pound of quicklime powdered, add them together with sufficient water to form a paste, add a gallon of water, put the whole in an iron saucepan or kettle and boil for twenty minutes. When cool and settled pour off the clear liquid and store it in a bottle. Use at the rate of one-quarter of a pint to three gallons of water. Observe we do not advise you to proceed otherwise than experimentally at first. See our remarks to another inquirer. We should ventilate more freely, keep the atmosphere of the vinery drier, and give the roots an extra supply of water or liquid manure to meet the demands of increased transpiration. The house should never be closed at night nor the temperature suddenly rise in the morning, or the berries being colder than the atmosphere will cause the moisture in the air, however slight it may be, to condense on them, and this favours mildew.

Broccoli (Inquirer).—Your letter arriving some time before the hamper has been mislaid, but we remember its contents, and you will recognise our reply. The head is a very fine one, and we think the variety worth preserving for growing with others in a trial, as in no other way can its value be so well determined. It is impossible for anyone to judge of its merits satisfactorily from a solitary example, especially without cooking; and in consequence of the neglect of one of our messengers, which we regret, the specimen was not handed to us soon enough for that purpose.

Plum Leaves Silvery (M. B.).—We have many times, and in different places, observed the foliage of Plum trees assume a silvery appearance, and the branches afterwards die. We have also noticed that the occurrence has been most frequent when bright and dry days have followed a term of wet and dull weather. We have further found that the trees which have suffered the most were those with apparently fine healthy foliage, and that the leaves after the attack were harsh and dry like smooth paper. As we could not find any trace of insects and mildew to account for the condition of the leaves we attributed the cause of injury to sudden and extreme transpiration—a drying-up of the sap, and the consequent separation of the cuticle from the substance of the leaf, and the cuticle being transparent, must necessarily when raised impart to the leaf a silvery appearance. This is in substance what we have more than once stated; but with the object of gaining further information we submitted some leaves to Mr. Worthington G. Smith, who is an adept in detecting under the microscope, and delineating things hidden from ordinary observers. His reply was in accordance with our own views on the subject. He found the cuticle raised from the leaves and much torn, only adhering to the veins. He attributes this to the substance of the leaf shrinking or drying up, which seems to show that at one period of growth there was a too rapid formation of leaves, and then the growth ceased, and the too much distended material shrunk back and tore itself away from the cuticle. For this serious change to which Plums, and occasionally Peaches and Laurels, are liable, we regret to say we know of no general remedy. We can only suggest that if your tree makes gross growths to lift it in the autumn and place the roots in fresh loam with an admixture of calcareous matter, making the soil firm, and thus incite the emission of a number of surface fibres, these conducing to sturdier growths and smaller and stouter-textured leaves.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (J. W. L.).—Lycaste Deppei. (F. S., Ticehurst).—Allium ursinum, the Broad-leaved Garlic. (B. T. B.).—1, The copper-coloured Austrian Briar; 2, Spiraea trilobata; 3, Cratægus coccinea. (C. H. Stephens).—1, Vitis heterophylla variegata; 2, Begonia manicata; 3, Delphinium nudicaule; 4, Saxifraga aspera; 6, Limnanthes grandiflorus; 7, Megasea ligulata. (A Constant Reader).—1, Briza media; 2, Scilla patula; 3, Davallia bullata; 4, Fraxinus ornus; 5, Carex dioica; 6, Unrecognisable without flowers. Please state if you have sent another parcel of flowers with a different signature. (W. B.).—1, Æchmea Mariæ Reginæ; 2, Aspidistra lurida; 3, Insufficient without flowers; 4, Sempervivum arboreum variegatum; 5, Sedum carneum variegatum. (J. E. C.).—Chianthus puniceus.

COVENT GARDEN MARKET.—JUNE 10TH.

The market continues well supplied with all classes of fruits and vegetables.

		s. d.		s. d.				s. d.		s. d.	
Apples	.. ..	½ sieve	2 6	to 4 6	Oranges	.. ..	100	4 0	to 7 0		
Chestnuts	.. ..	bushel	16 0	0 0	Peaches	.. ..	per doz.	15 0	21 0		
Cobs, Kent	.. ..	per 100 lbs.	0 0	0 0	Pears, kitchen	.. ..	dozen	1 0	3 0		
Currants, Red	.. ..	½ sieve	0 0	0 0	,, dessert	.. ..	dozen	0 0	0 0		
,, Black	.. ..	½ sieve	0 0	0 0	Pine Apples English	.. ..	lb.	2 0	3 0		
Figs	.. ..	dozen	4 0	6 0	Plums	.. ..	½ sieve	0 0	0 0		
Grapes	.. ..	lb.	3 0	5 0	Strawberries	.. ..	lb.	2 0	4 0		
Lemons	.. ..	case	10 0	15 0	St. Michael Pines	.. ..	each	3 0	7 0		

VEGETABLES.

		s. d.		s. d.				s. d.		s. d.	
Artichokes	.. ..	dozen	2 0	to 4 0	Lettuce	.. ..	dozen	1 0	to 2 0		
Asparagus	.. ..	bundle	2 0	5 0	Mushrooms	.. ..	punnet	0 0	1 4		
Beans, Kidney	.. ..	100	1 0	0 0	Mustard and Cress	.. ..	punnet	0 2	0 0		
Beet, Red	.. ..	dozen	1 0	2 0	Onions	.. ..	bunch	0 3	0 6		
Broccoli	.. ..	bundle	0 9	1 0	Parsley	.. ..	dozen bunches	2 0	3 0		
Brussels Sprouts	.. ..	½ sieve	0 0	0 0	Parsnips	.. ..	dozen	1 0	2 0		
Cabbage	.. ..	dozen	0 0	1 0	Potatoes	.. ..	cwt.	4 0	5 0		
Capsicums	.. ..	100	1 6	2 0	,, Kidney	.. ..	cwt.	4 0	5 0		
Carrots	.. ..	bunch	0 3	0 4	Rhubarb	.. ..	bundle	0 4	0 0		
Cauliflowers	.. ..	dozen	2 0	3 0	Salsafy	.. ..	bundle	1 0	0 0		
Celery	.. ..	bundle	1 6	2 0	Scorzoneria	.. ..	bundle	1 6	0 0		
Coleworts	.. ..	doz. bunches	2 0	4 0	Seakale	.. ..	per basket	1 0	0 0		
Cucumbers	.. ..	each	0 3	0 6	Shallots	.. ..	lb.	0 3	0 0		
Endive	.. ..	dozen	1 0	2 0	Spinach	.. ..	bushel	2 0	4 0		
Herbs	.. ..	bunch	0 2	0 0	Tomatoes	.. ..	lb.	0 0	0 0		
Leeks	.. ..	bunch	0 3	0 4	Turnips	.. ..	bunch	0 4	0 0		



THE HAY HARVEST.

At last our doubts about the hay crop are ended, the timely change from cold dry weather to warm nights, bright hot days alternating with dull wet ones, when the heavy showers set every crop growing with such vigour and rapidity that a wonderful change was wrought in a fortnight; and now we are able to say that before Midsummer-day the hay harvest will be in full swing once more, and we wish our readers fine sunny weather for the work, and an ample store of good hay, which they will have with fair weather for the harvest, for the crop of Clover and Grass is excellent upon all well-managed land, proving once more the truth of the axiom, "Good farming is profitable farming."

Success or failure in haymaking depends very much, but not altogether, upon the weather; watchfulness, promptitude, and energy also tell. Let us take especial care to be ready for the work: mowing machines, and all other implements, as horse rakes, tedding machines—or, as they are called in the eastern counties, hay-shakers—have been closely examined, put into thorough repair, and for the mowing machine duplicates are provided of the parts most liable to breakage, such as knives, driving-rods, and guards of exposed parts of the machinery. We prefer flat files for sharpening the knives, and have procured a supply, with which a man will be constantly employed while the mowing is being done. Very sharp knives are an imperative necessity for good work to be done by the machine, and a close watch must be kept upon it in order that the knives may be changed often enough. If the knives are at all blunt a rib of uncut grass is left along every swathe and much good fodder wasted, for cattle will not eat it, fresh tender growth being so abundant after the hay is cleared off the pasture. When we first saw such bad work being done by a mower and asked the reason of it we could not obtain a satisfactory answer; the general opinion was that the machine was at fault, but why or how it was so had not been ascertained. A little attention soon showed us the cause, and a man was at once told off to each machine for knife-sharpening and to fasten any loosened rivets. When mowing is done by machines all possible provision must be made against accidents, and when they occur the necessary means from quick and efficient repairs must be at hand, or invaluable time will be lost and the haymaking come to a standstill. It is because experience has repeatedly shown us this that we are so particular in doing all we can to guard against and yet prepare for them. Upon one farm the surface is so hilly in some parts that scythes have to be used, upon another they are required in a park among timber, and the men that use them are subsequently turned to account upon the ricks and for loading the hay. On other farms the surface is level and the boundaries well defined, so that no scythes are required. These matters are mentioned to show that no general rules can be laid down for the work, but each farm must be managed according to its particular requirements. Small hand rakes have been looked over and the faulty ones repaired, new ones being procured when necessary; pitchforks of wrought iron have been put into working order—we much prefer the improved cast-iron forks, which are light strong tools, very durable and not liable to get out of order. There is a stout rick cloth, with poles, ropes, blocks, and pulleys at each farm, and we regard them as indispensable.

Upon some farms which we have recently taken in hand we found several very small ricks of old hay, so made because there was no rick-cloth provided for rick-building, and the small ricks have been covered with a waggon tarpaulin and corn racks if it rained during the haying. We need hardly

say that we found the hay to be decidedly of inferior quality, some of it, made during the fine weather of last summer, being positively musty. This is an instance of false economy or carelessness to which we would draw attention. A full-sized rick-cloth is an indispensable aid to good haymaking. Without it rain may be kept out of the rick, but when a tarpaulin is thrown upon the rick the vapour is kept in and excessive fermentation is the result, more hay often being spoilt than would purchase several rick-cloths. It is only those favoured individuals having hay-barns that can dispense with a rick-cloth. We may add that due attention must be given to the condition of ropes, pulleys, poles, and ladders. Let it not be thought that such precaution is unnecessary. We have more than once seen life and limbs in jeopardy from the use of unsound tackle, and workmen are very careless about such matters, frequently running much risk which it is in their power to avoid.

Harvest carts, with ladders projecting over the back and front, are much used in some counties; but we regard them as decidedly objectionable, it being no easy matter either to load or unload them, shaken as the men must be by the movements of a horse teased by flies. Two waggons are indispensable to the quick and efficient carting of hay, the four wheels forming a sufficiently firm support for the work, and it must not be forgotten that it is clearly in his own interest that a farmer provides really useful implements.

Haymaking is a critical undertaking beset with much anxiety and some degree of uncertainty; well is it, therefore, to take proportionate pains to ensure success so far as may be. Of the actual work itself we purpose treating in another paper, our object here being solely to call attention to those preliminary matters which we have found by long experience to require attention beforehand. To put off mowing when the grass is ready because our arrangements are immature is certainly bad practice, much to be deplored, risking, as it does, the quality of the hay in so many ways.

WORK ON THE HOME FARM.

Never have we seen the young Mangold crop more promising in appearance than it is this year. Much of it, however, is getting overgrown by weeds, and the hoeing is being done as fast as possible. Growth of corn, roots, and weeds is so free just now that we have much difficulty in keeping abreast of the work. Hoeing in Peas, Beans, and Wheat is now over. Some late Barley and Oats is still very foul, but a week of fine weather will help us to bring up arrears. The horse hoe has been put between the Potatoes, hand-hoeing followed to clean out weeds in the rows before the earthing is done. Swede-sowing is now being done, and white Turnips will follow. We have sown our last crop of Tares, and hope to get in the white Mustard before the haying begins, but showery weather renders the clearing of fallows a difficult and tedious matter. The crop of *Trifolium incarnatum* is exceedingly good. We are using it for horses now, and intend mowing a considerable breadth for hay; winter Tares will follow this crop nicely, and they are an excellent crop. Carrots, too, look well, and will soon be ready for thinning. The month, on the whole, is a very busy one, so many crops requiring attention together.

Farm horses, when they leave work, are turned out upon Trefoil, Clover, or grass; they are led to the stables in the evening, and have *Trifolium* there with a little corn if they are working hard. Carting of manure from the yards is being done as fast as possible, or rather as often as horses can be spared for such work. The cowyards will be cleared first, and if we cannot manage to clear other yards before the haying the manure will be thrown up into heaps to prevent loss of nutriment. The sheep have been washed, and shearing is now being done. As soon afterwards as possible we like to dip all the sheep in Cooper's preparation, as we find it an excellent preventive of fly-sticking. Care is taken to wait till any wounds inflicted with the shears are healed. A supply of Cuff's ointment is now given to each shepherd in readiness for attacks of fly, from which the flock can never be said to be quite safe. As the lambs are weaned old ewes will be drafted out of the flock and brought into condition for sale as early as possible. We have a fine batch of ewe hoggets to enter the flock this season, which will enable us to withdraw many inferior sheep. South Down and Leicester hoggets are in excellent condition now, and we have flocks of both these excellent breeds. The Leicesters are, however, somewhat troublesome, for many of them are "jumpers," and we have as yet not been able to provide the special hurdles which we intend having for them.

BATH AND WEST OF ENGLAND SOCIETY AND SOUTHERN COUNTIES ASSOCIATION.

The Brighton meeting of this old-established Society commenced on Monday, June 8th, which considerably surpasses any of its predecessors in the

number of its stock entries, whilst some new features introduced in the Exhibition render it specially noteworthy in the long record of the Society's proceedings.

The total of this year's entries is by far the largest ever reached by the Society, considerably exceeding that at the great Centenary Show of 1877. A specially interesting addition to this year's prize list is the class for a bull of any pure breed and two of its progeny, for which, in addition to £40 offered by the Brighton Local Committee, an extra prize of plate is given by the Marquis of Bristol. The entries for this include Devon, Shorthorn, Hereford, Sussex, Jersey, Guernsey, and Highland cattle.

Cheese and butter prizes are added to this year's schedule, and have produced a good competition, the entries numbering forty-two.

The poultry show, although the leading breeders are well represented, is not so large as last year, the total number of pens being 442.

A department of special interest has been introduced this year in the exhibition of a working dairy. Here lectures and explanatory illustrations will be given, the subjects treated including the most recent improvements in butter-making, the processes of making the soft cheeses of the Continent and of Devonshire butter and cream. In order that these demonstrations might be as thoroughly useful and practical as possible, the services of Miss Smithard, who has been most successful in a similar capacity at the shows of the Royal Agricultural Society, and also of Mr. Jas. Long, of Gravelly Manor, who is one of the leading authorities on dairying subjects, were secured, and they give explanatory lectures at certain hours on each day of the meeting, whilst the Right Hon. Sir T. D. Acland, Bart., M.P., has arranged for the manager of the dairy on his Devonshire estate to attend in order to specially illustrate the Devonshire dairy systems. Messrs. Stephens and Clark, of Hove, assist in working the dairy, and supply the milk and cream.

There is a very extensive exhibition of implements, machinery, seeds, &c., all the leading implement firms being represented. Commencing at a convenient point, not very far from the main entrance, is a long line of steam engines, occupying no less than eighty compartments of the special shedding, and propelling almost every description of agricultural machine requiring such agency, whilst in the extensive ranges of shedding elsewhere is an endless variety of implements adapted to the various requirements of the farm, the road, and the homestead, together with specimens of seeds, cattle foods, cattle medicines, artificial manures, and a large number of miscellaneous exhibits which may be considered rather domestic than agricultural in their character. Added to these there is an unusually large collection of carriages and vehicles of every description. In the trial fields contiguous to the show yard are seen in operation the most recently improved forms of ploughs, reapers, mowers, hay-makers, harvesters, sheaf-binders, &c., and other labour-saving machines from the best makers.

The show yard, which is in Preston Park, is most picturesquely situated, and is generally pronounced to be, in its general aspect, one of the most effective which the Society has ever succeeded in obtaining.

In addition to the numerous houses and appliances referred to on another page, two very important contributions were entered from the well-known seed firms, Messrs. Sutton & Sons, Reading, and Messrs. E. Webb & Sons, Wordsley, Stourbridge. Each of these stands is about 150 feet long and most handsomely decorated, forming the most ornamental structures upon the ground. Messrs. Sutton & Sons have a large number of fine roots, Mangolds and Swedes being uncommonly good of such varieties as Sutton's Intermediate Golden Tankard and Mammoth Marigolds, and Improved Champion Swedes. Very clean samples of vegetable seeds are shown, together with a great number of Grasses for lawns, heavy land, and light land. A choice collection of *Ixia* flowers of varied colours with fine spikes of *Muscari monstrosus*, the Feather Hyacinth, form an interesting feature in this admirably arranged stand.

Messrs. E. Webb & Sons have an extensive collection of roots of their prize strains, Mangolds, Swedes, and Turnips being represented, while of Grasses about 500 samples are shown. Potatoes are of notable quality, cereals and various manures being also contributed.

CONDITIONS INFLUENCING LAND DRAINAGE.

[A Lecture by Professor J. Wrightson. London: Chapman & Hall.]

It is of the utmost importance that land should be thoroughly drained, for no other improvements can be effective until the land is freed from the stagnant water.

The question may be asked, "Why should drainage be such an excellent thing?" Water is one of the most essential conditions of plant life—indeed, 90 per cent. of most vegetables consists of water. "Why then should you be so anxious to get rid of the water?" In reply to this question we may remark that the object of draining land is not so much to deprive the land of water as it is to increase the amount of water contained in the ground.

Well-drained land is more friable than wet land, and in accordance with this fact the porosity—or power of the soil to retain moisture—is increased. The ground, in fact, becomes like a sponge, and the water is gradually given up to the plant. A well-drained field allows the water to pass through it very readily, but an undrained field soon becomes "puddled."

The benefits of drainage are rendered more evident by the following considerations.

There is a change in the conditions under which water exists in the soil. By draining, not only is a larger amount distributed throughout the soil, but the water is changed from a condition of stagnancy to one of movement.

Stagnant water excludes the air, and thus the great purifier—oxygen—is kept from doing its necessary work.

Water in a state of stagnancy prevents the development of carbonic acid in the interstitial atmosphere of the soil, and as a consequence of this, less of the mineral constituents of the soil are rendered available for plant life.

Again, when the ground is surcharged with water a loss of warmth ensues, by reason of evaporation from its surface. The enormous amount of heat thus lost has been calculated to be equal to the combustion of 12 cwt. of coal per acre every day. In summer the surface water is kept warm, and as it is lighter than the water beneath, it remains at the top, and thus prevents the heat from penetrating to the lower strata.

The average difference of temperature between drained and undrained land has been found to be 10° F. This is equal to the average difference between the temperature of February and that of May.

In winter, on the other hand, the surface becomes cool, and the cold water being specifically heavier will sink; at the same time the warmer water rises to supply its place. Thus we obtain a cold current of water downwards, and a warm current in an upward direction, and thus the entire mass of soil is chilled.

"Shrinkage" in the case of a drained soil may amount to as much as 5 per cent. of its bulk. It is well known that land which is drained soon becomes dry after a fall of rain. This drying is accompanied by contraction of the soil, and when again subjected to rainfall it undergoes expansion. This alternate contraction and expansion causes a certain amount of pulverisation, and thus the land gains an immense benefit.

To give an idea of the amount of contraction which sometimes takes place, Professor Wrightson instanced an observation he made in 1876, after a long spell of dry weather. In this case a walking-stick was buried in some of the cracks which formed a kind of network over the whole field.

A great change is observed in the condition of clay lands which have been subjected to drainage. The blue clay becomes red, or, in other words, the ferrous oxide is converted into the higher form—ferric oxide.

Another advantage of drained land over undrained land is that gained by the roots, which are enabled to penetrate to a greater depth, and draw their food from that part of the soil from which, in an undrained field, they are debarred.

The farmer should also be influenced to drain his lands by the fact that an earlier harvest is obtained. In some cases harvest has been two weeks earlier after thorough drainage. The crops, also, are larger and of a higher quality.

Another consideration in favour of drainage is that there is a great saving of horse labour, because the number of working days throughout the year is increased, for a farmer who has well drained his land can get to work with his tillage operations, while the man whose fields are undrained is waiting for his land to dry.

There is a great freedom from certain plant diseases on drained soil. These diseases, such as blights, mildews, and rusts, spread rapidly on wet ground.

The health of the live stock is improved by drainage of the land on which they feed, and the general health of the population in the district is also improved.

The "reciprocal action" of drains was next alluded to; and the lecturer was of opinion that on an average clay soil a distance of 18 feet apart was usually sufficient to establish reciprocity of action.

Again, the depth to which land must be drained varies. On a stiff clay it will be less than on a sandy soil. It must be borne in mind in connection with this point that in order to obtain 18 inches say of dry soil it is necessary to drain to a depth of 2 feet 6 inches or even 3 feet. There is now a tendency with farmers to return to the old method of shallow drains, as they are considered to be more efficient in their action.

The part of the soil containing the water which requires to be removed is called the reservoir, or section of supersaturation, the upper surface of which is termed the "water-table." Thus the main object of drainage may be said to be the lowering of the "water-table."

In the course of the lecture Professor Wrightson exhibited a diagram, and explained the mode of action of Elkington's system of draining, which was discovered in 1763 while an attempt was being made to get rid of the water with which the fields were surcharged.

This system is applied to the greatest advantage on those lands which consist of alternate strata of permeable and impervious beds giving rise to springs.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	9 A.M.						IN THE DAY.				Rain
	Barometer at 32 nd and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass		
1885.		deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
May and June.	Inches.										
Sunday	31	30.090	59.6	51.4	W.	54.7	67.5	49.3	117.2	44.6	—
Monday	1	30.251	61.7	52.8	W.	55.6	67.8	47.8	120.2	41.4	—
Tuesday	2	30.298	63.2	55.8	S.W.	56.4	75.7	45.4	116.4	38.9	—
Wednesday ..	3	30.124	66.3	55.1	S.E.	57.8	77.9	47.6	119.2	41.0	—
Thursday	4	29.907	74.2	62.4	S.W.	59.4	81.7	51.3	127.4	43.8	—
Friday	5	29.827	74.2	63.4	S.	61.3	80.2	60.1	123.8	51.9	0.301
Saturday	6	30.001	53.7	58.1	S.W.	62.6	67.5	53.0	82.8	57.8	0.132
		30.071	65.4	57.0		58.3	74.5	51.4	115.3	45.6	0.433

REMARKS.

- 31st.—Gloriously bright and clear.
 - 1st.—Fine and bright.
 - 2nd.—Fine, bright, and warmer.
 - 3rd.—Fine, bright, and nearly cloudless.
 - 4th.—Fine, bright, and ho.
 - 5th.—Pleasant and fine, not so hot; cloudy in evening, with electrical breeze at 7 P.M.
 - 6th.—Rain began soon after midnight, and continued at intervals all day.
- A fine bright week, much warmer, and with two days on which the temperature exceeded 80°.—G. J. SYMONS.



COMING EVENTS

18	TH	Royal Society at 4.30 P.M. Linnean Society at 8 P.M.
19	F	
20	S	
21	SUN	THIRD SUNDAY AFTER TRINITY.
22	M	[goniums.]
23	TU	Royal Horticultural Society—Committees at 11 A.M.; Show of Pelar-
24	W	Richmond and Leeds Shows.

ALPINE PLANTS.

[Substance of an address given to the Horticultural Club by the Secretary, June 9th.]

IN undertaking to deal with the most interesting subject of alpine plants, I must at the outset disclaim all ideas of treating it scientifically. This I cannot do, as I am not a botanist but merely a lover of plants. You must expect something very different from the interesting address given at our last meeting by my friend Mr. Druery on Ferns; moreover, were I ever so competent, the subject is so wide, and embraces so many different genera and species, that I know not how I could very well treat it so. My observations will thus have to do with the practical side of the question, and with some things which I think are sometimes overlooked by those who are in so many directions beginning their culture.

It is clear to all that the desire to cultivate these most beautiful and interesting plants has very widely extended during the past twenty years. We have seen, I am thankful to say, the decline of that most artificial and unsatisfactory style of gardening which is known as the bedding-out system—a system which cramped the energies of our gardeners, left our gardens bare for nine months of the year, and then filled them with beds of garish colours or with plants which made them more like a piece of carpet thrown upon the lawn than an English flower garden; where you might walk through a garden without getting one whiff of delicious odour or seeing one natural form. It was inevitable that a reaction from this should take place, and we have seen, in private gardens at least, a return to those old plants which we used to delight in as children, supplemented, as they have been, by so many beautiful forms gathered from all parts of the world. Previous to that time the vendors of such plants might have been counted on the fingers of one hand, while now in all parts of the country we meet with firms who undertake to supply not only the commonest but the rarest species. It is not with herbaceous plants, however, I have to do, although the taste for alpine flowers has sprung from this. When once the hardy herbaceous border began to take the place of ribbon borders and polychrome beds, it was immediately felt how many lovely things were unsuitable for the borders; and then the rockery was formed—sometimes in bad taste, sometimes the reverse, sometimes with ill success, sometimes to the astonishment of the owners, with glorious results.

Many persons have been deterred from attempting to grow alpine plants from their supposed difficulty, a difficulty which from various causes has been much exaggerated. It is true that there are some gems amongst them which seem to defy all efforts. Some years ago Mr. Backhouse of York told me that he had spent £100 in trying to grow *Eritrichium nanum*, a little alpine gem, but had as yet failed to do it well; and I remember once, a few years ago, going to see the garden of one of our most successful alpinists (if I may use the term). I asked him about it, and his reply was, "Well, if you had come yesterday I should have proudly

said that I have succeeded; but look there!" and I then saw a poor plant evidently in a galloping consumption. But it is commonly supposed that we cannot grow these plants because of their being covered during the winter with a warm mantle of snow, and that the humidity of our winters prevents their succeeding; but I have been a little staggered lately in considering the condition of two plants which are both common to Britain and Switzerland—according to Mons. H. Correvon there are only fifteen which are so (and shall I ever forget the sight of these beauties on the top of the Col du Balme?)—I mean *Gentiana verna* and *Silene acaulis*, with both of which growers have experienced much difficulty, and the usual reply one gets is, "Oh, you must recollect how impossible it is to imitate their condition in winter: how warm and dry they are kept;" but they both occur in our islands at a great elevation. *Silene acaulis* is found on Helvelyn amongst other places, and there the rainfall is 92 inches, so that it cannot be the moisture that hurts it. I am inclined to think that it is not so much this as the high temperature we sometimes get with wet in the winter months. This gives them a start prematurely, and then cold winds coming on them perishes them. There is no difficulty whatever in growing *Gentiana verna* in pots, and I therefore think that the high elevation at which these plants occur with us keeps them in a low temperature. There is another plant which all travellers to Switzerland know very well, and which most of them are anxious to bring home, although they do so with the firm conviction that it will never grow. I mean the Edelweiss. This grows at a very high elevation, and so many lives have been lost in attempting to get it that it is now made penal to attempt doing so. And yet there are few plants more easily grown, as my friend Mr. Girdlestone will tell you, and, as I have found, it freely seeds and comes up on the rockery of its own accord. It is sometimes said it is not so white as you get it in Switzerland. This may possibly be owing to its growing in richer soil, and if it be planted in poorer soil it will be white, as its name implies "nobly white." After all, it is perhaps more valued as a matter of sentiment. I know of one lady who, travelling in Switzerland, was very anxious to obtain a plant. Her husband assured her that there was no romance about it; but all in vain, until, in passing through one of the Swiss towns she saw a plant of it in a broken pot outside a grocer's window. All the romance was taken away, and she was contented to wait until she returned home, when she was told she should have a plant of it.

There are a few things which it is necessary to bear in mind in the construction of a rockery, whether large or small. They are that it should be exposed as fully as possible to the light and sun, and that the requirements of each plant should be well considered, although there is an adaptability about them which people do not always recognise. I have seen, for example, the curious but common Cobweb Houseleek growing on the rocks above the Mer de Glace at Chamounix at places where it had not apparently an atom of earth in which to root; but yet one knows that it will thrive and look as well in positions on the rockery where it can strike its roots deep into the soil. Again, *Ramondia pyrenaica*, that most lovely alpine plant, is found in its native habitat on the shady sides of rocks where the sun never seems to come, and we are enjoined to give it such a position on our rockeries; but I have a plant of it now in full bloom crowded with flowers where it gets a tolerable amount of sun. Then our common native Maidenhair, *Adiantum Capillus-Veneris*, is a most difficult plant to grow in the open air; but place it in a stove, and it becomes luxuriant to a degree. It is a great mistake to make a rockery in a shady part of the garden, for all who have seen the Alps in their floral beauty know well how completely exposed they are to the influence of the sun; and where there are plants which do rejoice in the shade, such as the alpine Primulas, a place to suit them can generally be found on the east side of the

rockery, which should run as nearly as possible east and west. If the rockery is extensive walks should as much as possible be avoided. It is this which detracts so much from the rockeries in our public gardens. The many-headed monster could not, of course, be permitted to walk over the places where plants of value are growing, and so walks must be provided for them; but not so in private gardens. In our friend, Mr. Loder's, for example—which is, I think, by far the finest and richest alpine garden that I have seen, and I have seen a good many—there is only one walk down the centre, and to examine particular plants you have to step on and over the stones to do so. This informal arrangement preserves the natural appearance of the garden and adds much to its charm.

A good deal of late has been written on the subject of soils, and it has been insisted on that we must provide limestone for plants found in such localities, and so on. This has been done in a very complete manner by Mr. George Paul in his new alpine garden at Broxbourne; and while I have little doubt that plants will be grown more successfully in this way, yet I am sure that it is not absolutely necessary. A good sandy loam suits, according to my limited experience, nearly all the plants we require to grow, and it is only deterring beginners to say that they must provide special soils for their plants. A few, such as our chalk-loving plants, as the British species of *Orchis* and *Ophrys*, will require to have their particular wants provided for, but a large number of very lovely things will thrive in the soil I have indicated.

A word of caution is necessary as to the introducing of some plants which, pretty in themselves, become a nuisance by the manner in which they overrun everything—such plants as *Anemone sylvestris*, *Dianthus deltoides*, and *Rosa pyrenaica*. The latter will cause me to take up a piece of my rockery in order to get rid of it.

I have thus marked a few of the plants which I think may be the means of opening an interesting discussion, and as we have several successful growers of alpine here present to-night I hope we may derive much instruction from the details of their experience.—D., Deal.

[A very interesting discussion as noticed in our last issue followed the reading of this paper.]

WHY GRAPES CRACK.

"A THINKER" is right with regard to the effect that "hard hitting" has on me, as when it is delivered fairly and in good spirit I much prefer it to any amount of flattery. What I do object to are garbled quotations as well as unfair deductions, and in both of these respects "A Thinker" is an offender. It seems to me that if he had such a strong case he would not trouble to parade his great age and experience and general superiority to myself, but he would have written more to the point. This is a busy time with us, and not many can afford to wait for the mountain to "bring forth a mouse," for after all, and in spite of his excessively confident assertions, there is very little to be gleaned from his page of matter. What I wrote concerning the professors was that all their experiments "tend" to prove their pet notions to a demonstration (I did not intimate they succeed in so doing), and I find on reference to a dictionary, as kindly advised to do by my critic, the definition of the word tend is "to move in a certain direction: to aim at: to contribute." If I make no greater blunders than that which he makes so much of, I shall be well content, and no correction will be needed.

I ask again, will there be found many believers in the theory propounded by Messrs. McIndoe and "Thinker?" Will many practical gardeners believe it is possible for any kind of fruit, whether attached to a plant or severed, to imbibe sufficient moisture through its skin to cause it to crack, and this in the short space of a few hours? That all more or less are capable of imbibing a very minute quantity of moisture through stems, foliage, and fruit may be correct enough, and the coarse porous roots of *Orchids* may plump up in a congenial atmosphere, but that any should burst in consequence is very hard to believe. Frogs, we are told, will absorb much moisture through their skin, this causing them to swell somewhat, but *Æsop* is the only chronicler who gives an instance of a frog bursting. It must not be thought I am accusing our friends of imitating the author of a wonderful book of fables, as there is no doubt they are, or at least one is, fully convinced of the soundness of the newly announced theory.

We appear to be well agreed that the primary cause of Grapes cracking is an excess of moisture in the berries, but how this excess of moisture finds its way there is the question at issue. Mr. McIndoe attaches much importance to the absence of moisture after the bursting has occurred;

but this ought not to influence him in favour of the endosmose theory, simply because we might as reasonably expect a drop to ooze out from a repleted and bursted berry, whether over-fed inwardly or outwardly. If they are capable of absorbing so much moisture from the atmosphere, they would be quite as capable of taking in more than is good for them if supplied to them with a syringe; yet I defy either of my opponents to crack berries in a well-ventilated house in such a manner. Neither will the berries crack when fully ripe, and, therefore, less juicy, and after the foliage has fallen, and this Mr. Henderson proves. They will decay in a badly ventilated house, but do not crack under similar condition as would affect them when in full leafage. We always cut Tomatoes in order to prevent cracking, and they are placed on a dry shelf or staging, simply because a moist position causes an early decay. The skins of Grape berries and Tomato fruits, and I might say the pulpy matter each contain, are somewhat analogous, and both appear to crack under similar conditions. Anybody can experiment with the latter, but no one can afford to do so with a house of Grapes.

Why does "A Thinker" persistently ignore the possibility of the cracking of the berries of the Duke of Buccleuch and other fruits from undue expansion of the fluids, as suggested by Mr. Thomson? This is really the true cause of the cracking of fruit, which is "hampered" in a wet state. A mass of wet fruit is bound to become heated, and softening or weakening of the skins finishes the mischief. If it was brought about by the very small quantity of moisture attached to each the same thing would happen if we wetted Grapes and any other kind of fruit that is liable to crack, and merely cover them so as to prevent evaporation. Do the top fruit in the hampers crack as badly as those underneath? I say most decidedly not; yet if left on the tree where they would dry quite as quickly every plump fruit would perhaps have been spoiled. Those sheltered from the wet by overhanging branches are certain to be more backward, and in many cases are of inferior quality, therefore less liable to burst. I am asked to explain "how it is that so much soft fruit bursts in the night when packed wet in the day, even when taken out of the hampers and spread on trays?" In my comparatively short career I have not seen an occurrence of this kind, but doubtless our friend has or the question would not be asked. I do not suppose he expects me to believe they absorbed too much moisture, and I shall want a lot of converting before I believe that the small amount of moisture on each skin, even if it passes into the fruit, will fill it to a cracking point. It is too incredible, and will only be smiled at. A hamper of wet ripe juicy fruit will commence heating in a short time, and expansion of the fluids would follow; and when laid out thinly the skins would naturally be the first to dry, contracting accordingly, hence the cracking. The same argument holds good with "the Duke" at the Manchester Show. Moisture and heat swells the pulp of the fruit, and to a certain extent softens and renders the skins elastic; but in the case of an excessive supply of sap they become too weak to resist the rush, while, when the fruit is in a cut state and overheated, the bursting follows cooling and contraction. Plenty of light and air results in the formation of tough skins and the fruit keeps better accordingly. In hot dry weather the moisture passes from the leaves principally, this diverting it from the fruit. A dry heat does not unduly expand the juices as "A Thinker" wants to insinuate I stated; but, on the contrary, hastens the formation of sugar. It is the moist heat that does all the mischief to ripe or nearly ripe fruit.

"A Thinker" tries to put a ridiculous complexion on much that I advance, notably on my remarks upon the softening of the skin; but he has overshot the mark. I did not say softening of the skin "predisposes cracking," nor did it at the time enter my head that such a construction would be put upon my assertion. Any schoolboy knows only too well when his hands are most liable to "chap." If, however, unduly softening the skin does not really predispose cracking, how is it the "horny hand" of the labourer, and which seldom finds its way into warm water nor gets anointed with scented soaps, rarely cracks, while the soft hand of the aristocrat, if exposed to a cold dry wind, chaps badly? If there is any truth in the endosmose theory the porous hand of the individual—say, a washerwoman—constantly being moistened ought to become bloated, and crack occasionally; in fact, I should think they would be more liable to suffer from it than the glazed skin of a Grape berry.

I, too, should be glad to have Mr. W. Taylor's opinion on this new notion, and I hope soon to get it without openly flattering him with the idea of calling in his assistance.—W. IGGULDEN.

THE ANTWERP INTERNATIONAL EXHIBITION AND CONGRESS OF BOTANY AND HORTICULTURE.

I BEG to inform you that an international Congress of botany and horticulture is to be held in Antwerp on the 10th of August next, at the same time as the great international flower show.

At the general assembly of the Royal Botanic Society of Belgium, on the 7th of December, 1884, it was decided unanimously that the Society should participate in the Congress, and its directors were at once invited to have an interview with the directors of the "Cercle Floral" of Antwerp (promoter of the Congress) and that of the "Chambre Syndicale des Horticulteurs Belges" as to the organisation of the said Congress.

The three directions have met since several times in Antwerp, Brussels, and Ghent. A commission was appointed to elaborate the programme to all regulations.

Distinguished botanists and horticulturists have been invited to prepare preliminary reports of the various subjects to be discussed. Forty-two of them (belonging to different nations) have promised to send their reports within a short time.

His Majesty King Leopold has condescended to grant his distinguished patronage to the Congress. M. le Chevalier de Moreau, Minister of Agriculture, and M. Leop. de Wael, Burgomaster of the City of Antwerp, have accepted the "Présidence d'Honneur."

Pecuniary aid has been allowed by the Belgian Government to the Town Council of Antwerp.

The International Association of the Congo is willing to give all such information that may be procured by its agents in Africa.

Four hundred adhesions to the Congress from all parts of the Continent have hitherto reached the Commission.

We sincerely trust that England will be represented at the Congress by numerous botanists and horticulturists. We therefore desire our undertaking may be made known to your numerous readers. For the President of the Commission—CHARLES DE BOSSCHERE, CHARLES VAN GEERT, JUN., Treasurer to the Congress.

[The Royal Horticultural Society have appointed Dr. Hogg and Mr.

was first described by Keyserling in the "Memoirs of the St. Petersburg Academy of Sciences" for 1875.

The value of this species is greatly enhanced because it succeeds admirably in a greenhouse temperature, consequently it can be grown by a much larger circle of Fern lovers. Both amateurs and gardeners generally should not fail to include *A. neo-caledoniæ* in a collection of the choicest Ferns.—J. T. R.

THOUGHTS ON CURRENT TOPICS.

BEYOND admitting that both Mr. Thomson and Mr. Henderson have justification for reminding me that Fern fronds and Cucumbers are kept fresh in water, partly by the conservation of their juices, which cannot



Fig. 121.—*ADIANTUM NEO-CALEDONIÆ*.

Thiselton Dyer (members of Council) as delegates to represent the Society at this Congress.]

ADIANTUM NEO-CALEDONIÆ.

THIS extremely beautiful species has been introduced from New Caledonia by Messrs. W. & J. Birkenhead, Fern Nursery, Sale, near Manchester, where not long since I saw a splendid batch of plants in different sizes, most of which had been raised from spores, and even in such a complete collection of Ferns I was much struck with its distinctness and beauty. There is nothing like it either in habit or general appearance. Perhaps in habit it approaches *Adiantopsis radiata* more than any other plant, but of course the frond characters are quite different from those of that species. The illustration gives a good idea of the plant, but we may say the fronds are very gracefully disposed, somewhat pedately divided, tripinnate below, simply pinnate above; the pinnæ and pinnules are more or less lanceolate, with elongated apices; the pinnules somewhat falcate, coarsely and deeply toothed; colour pale, almost pea-green; stipes slender, blackish. It

evaporate under the conditions indicated on page 478, I will say nothing more at present (lest I should be tiresome) on the action of endomose than re-assert that its influence on vegetation in every form is far greater than is generally admitted, except by eminent scientific men, who are as firmly convinced on the matter as they are of potency of the law of gravitation, and are a little surprised that the subject has not been more deeply considered by gardeners. Space can, I think, be better occupied this week by a cursory review of a few other topics of a practical nature than by enlarging on a subject that appears essentially debatable in its nature, though it is really incontrovertible.

TIMELY hints have been recently given on the summer pruning of fruit trees. As has been intimated, this work is often, if not habitually, deferred too long. I am of opinion that Mr. Bardney is perfectly right in his observations on pinching the shoots of bush fruits on page 453. Strong-growing Gooseberry bushes will bear much more fruit if the shoots are topped now than if permitted to extend to be shortened when the crop, if there be a crop, is approaching ripeness; and for this reason, that the lower leaves that are then exposed to the light and air cannot endure the sudden change, hence collapse, while if the strong growths are not shortened at all the same leaves cannot perform their functions in the absence of light and assimilate crude sap and store nutrient matter where it is needed—

namely around the spurs and near the base of the shoots. In this event the upper parts of the growths are essentially the more fruitful in their nature, and it is because these are cut off at the winter pruning that so many vigorous bushes produce such poor crops of fruit. It is far better not to prune such bushes at all than to act in that far too common manner. I pause, however, to reflect that I am dabbling in science again, and can almost imagine some "practical" reviewer rising in rebellion against me.

THE great desideratum, as it seems to me, in summer pruning is to enable the lower leaves on the young shoots to develop fully under the most favourable conditions, as only then can they become perfect organs, preparers and storers of food. If imperfect, as they must be if shaded and overcrowded (with the strength of the trees appropriated by those above) they are deprivers instead of supporters of the tree, and what ought to be the most fruitful parts are really the most barren. Pinch early, is my advice if you pinch at all, and give the lower leaves a chance to do their important work.

THEN the influence of pruning on the current crop has to be considered. On this point your correspondent observes when the work is postponed until the fruit is far advanced and a general slashing of the growths follows to give it light, that it results in premature ripening, which means that the fruit must both be smaller in size and inferior in quality for the "assistance" that is afforded. That is quite true. Such "thorough" work as that paralyzes trees for the time being and the swelling of the crop ceases, whether of Currants, Grapes, Melons, Pears, or any other fruit.

"W. M." contributes a very useful article on Celery on page 455, advocating the raising of plants on mild hotbeds and transferring them when only a few inches high direct to the trenches. In my opinion that is the best practice that can be adopted for the main and late crops. It is too late for persons to raise plants in that way now, but it is soon enough to point out the mistake that is made in allowing those that are pricked out in nursery beds to remain there too long to become thin, tall, and crowded before removing them to the trenches. The first favourable opportunity should be seized for planting Celery, while the plants are still dwarf, and let them make their growth in the trenches, where it will be solid; whereas if crowded in beds the stems lack substance, and a serious check follows if plants are removed when a foot or more high. If dry weather prevails after planting much watering may be avoided by covering the soil in the trenches with lawn mowings or whatever else may be more convenient for preventing the escape of moisture from the earth by evaporation.

THE mention of lawn mowings naturally leads to a moment's thought on their effect in preserving Onions from the destructive maggot, as mentioned by Mr. J. Gilbert on page 469. That is an excellent hint opportunely given. I have never tried that plan of baffling the enemy, nor can I do so, as the Onions in my garden are not attacked; but I should most certainly cover the soil amongst them with lawn mowings if the Onion fly were present. I can quite see the way in which the mulching may prove of great service. The Onion maggots are not hatched in the soil and enter the bulbs from below, but the fly deposits eggs on the leaves of the plants in small clusters that are plain enough to persons who know what to look for. I have examined many hundreds of them with a magnifier, under which they very much resemble ants' eggs. They fall, hatch, and enter the plant, finding their prey instinctively if they meet with no obstruction. Soil drawn in ridges round the plants is a good barrier, and so also must be the grass mulchings, amongst which the maggots cannot travel. It is a mistake to suppose the eggs are deposited in the axils of the leaves, as a rule. I have watched the flies carefully on warm still mornings at this season of the year, and invariably observed the eggs on the leaves, from which they are easily displaced by the wind. I have driven thousands off with water forcibly applied with the syringe, and those that fall near the plants soon take possession of them if permitted to do so; but the newly hatched maggots cannot travel far, and I strongly suspect could scarcely travel at all amongst a layer of short grass. The plan, I consider, is highly worthy of being tried wherever Onions are liable to destruction by the maggot.

ON the page above quoted I perceive a suggestion which I think is worth bringing a little more prominently forward—namely, that the coming autumn will be exceptionally favourable for holding a Pear Congress in London, corresponding with the successful Apple Congress of 1883. This idea should, I venture to submit, be considered by the authorities. This is a "Pear year," and either one great gathering of the fruit should be organised, or periodical exhibitions of all the Pears that can be collected represented in a ripe state. If the present opportunity for testing the relative merits of the different varieties of the prince of hardy dessert fruits passes, a long time may elapse before another equally good may occur. In order, however, to have the finest examples of the greatest number of varieties, the fruit, as suggested by Mr. Young, must be thinned when the trees are heavily laden. It is quite as important to thin Pears as to thin Grapes for the production of superior specimens, and the work of thinning hardy fruit is far too much neglected. Let all whose trees are heavily laden think this matter over, for the subject demands particular attention at the present time.

So many persons fail with Tuberous Begonias as bedding plants, that

they are apt to consider the glowing descriptions of them in flower gardens overdrawn. It is not very easy to exaggerate the beauty of a really well grown bed of Begonias, but it is one of the simplest things imaginable to fail in producing a brilliant mass of luxuriant plants. Grow them under glass tenderly, with stems so weak that stakes are requisite to support them. Let the pots get packed with roots, then plant out, and failure is certain, just as certain as it would be with Potatoes prepared in a similar manner. The right method of procedure is sketched by "J." on page 456—namely, Grow them steadily and sturdily in boxes, from which remove them to beds of rich soil when the weather is favourable for the work, mulch the soil between the plants, and they will surprise by their vigour, floriferousness, and beauty.

DOES not your excellent correspondent, "D., Deal," when he complains of a "lull" in the herbaceous garden after July, forget the effectiveness of summer-flowering Chrysanthemums? There are several that expand in July, forming imposing masses of flowers in various colours right through the summer. I think these hardy border flowers have not yet received anything like the full share of attention to which they are entitled. Then, too, for flowering after July are there any plants more effective and better adapted for mixed borders than Pentstemons? I know of none. In colour they are most diversified; some delicate, others rich, while scarcely any plants can excel them in gracefulness of habit. Then if armfuls of Carnations are coveted from July till October, grow a number of plants well from seed, and there will not be much of a "lull" in the supply of sweet and pretty flowers in the garden, or for arranging in vases in rooms during the period indicated.

COMMON-SENSE remarks on the management of Vines are embodied in the article of "J. M.," page 463. It is a question if closing with much moisture so early in the afternoon that the temperature remains between 90° and 100° for some time afterwards has not been overdone in places, and I think it is undoubtedly wise to "reduce the temperature by degrees in the after part of the day," as in that way the maximum heat of 80° to 85° can be maintained for the longest time and under the most favourable conditions—namely, a free circulation of air.

DISBUDDING is mentioned. It is an important process, and it is very certain that all the gardeners in the country will not agree with me when I say that it is very easy to remove superfluous buds too soon; it may be a greater evil to unduly defer the work, but taking off one of two buds from a spur before the bunches are visible does not add one berry to the shoot remaining nor add to the eventual vigour of this shoot. I daresay I shall have someone "down upon me" for such heterodox teaching, but I cannot help it. I must say what I think about the matter. It is easy, as suggested by your correspondent, to tie down the young wood too soon, easy to syringe a great deal more than is necessary or advisable; easy to attach too much importance to stopping the growths at any particular leaf; easy to err in determining the weight of a crop regardless of the condition of the Vines; easy to attach too much blame to plants in vineries in the spring and summer when the crops of Grapes fail, and very particularly easy for an individual to blame anything but himself for a failure which, by a different method of treatment, might have been averted, always provided the means are afforded him for working effectively, and this is certainly not the case in hundreds of gardens where good men, whom I pity, are expected to "make bricks without straw."

WHAT is the size of "A Kitchen Gardener's" wheelbarrow? That is the thought which occurred to me on reading the laudatory note (page 458) on Beeson's manure, a peck of which was mixed with every barrow-load of soil for Strawberries. If it is really necessary to use the manure so lavishly as your correspondent's note implies for producing a satisfactory effect, I venture to think a good many persons will find a difficulty in investing in it. I am so intensely conservative as not to try every "new thing." I had, however, almost decided to try the manure in question, but am now inclined to wait a little longer.

A GOOD many things in the way of prospectuses reach me from time to time, and occasionally something more substantial, with polite requests that I will say what I think about them. For instance—Mr. Witherspoon has sent me illustrations of his Red Rose Boiler that has been advertised in the Journal, and copy of certificate that was adjudged for it, signed by Mr. James Douglas and the late Mr. Charles Turner as Judges at the Newcastle Show. After an examination of the boiler by those authorities, how is it possible that anyone not having seen it can say anything worth recording? This only can be said, if I were contemplating heating, this boiler would be examined with the same care as others, and the one would be chosen which was conceived the best adapted to my purpose. I have less difficulty in dealing with a Broccoli. A fine example of Gilbert's recently certificated Burghley Queen has reached me, with the information that it is the result of a cross between Chou de Burghley and Cattell's Eclipse. When cooked the Burghley Queen was as white, tender, and delicious as any Cauliflower; and the fat marrow-like leafstalks surrounding it contributed if possible to its excellence. Most gardeners will have to try it. That is my opinion, and in giving it I do not invite nor covet articles of any kind to think about. Several I have had to pass because I could not "prove" them, and the senders are disappointed.—A THINKER.

CAMELLIAS.—Without the wood is thoroughly ripened the flower buds if they form cannot be expected to remain on the plants until the flowers are

perfected. Experience points to the conclusion that more buds fall through the wood being imperfectly ripened than probably from any other cause. To complete the growth quickly the house in which they are grown should be closed early in the afternoon. Syringe the plants liberally twice daily, and keep the paths and floors moistened frequently, so that a suitable atmosphere can be maintained about the plants. Abundance of water should be given at the roots whether the plants are grown in pots or planted out. If the plants lack vigour feed liberally with weak stimulants every time water is needed and thus assist them to make strong growth to be ripened as early as possible. Shade the plants from strong sun.—L. B. W.

THE HISTORY OF THE CHRYSANTHEMUM.

THE extraordinary popularity attained by the Chrysanthemum since its first introduction into this country has perhaps, with few exceptions, never been surpassed. Its easy culture, its capability of thriving even under the most adverse circumstances, have justly established its reputation of being pre-eminently a town flower, and it is obvious to those who have watched its advance for many years past that, instead of receiving less consideration at the hands of the flower-loving community, to be more likely than ever to increase in estimation. To the amateur living in the cramped limited area of a London suburb or large provincial town where gardens are disadvantageously surrounded and darkened by walls and lofty buildings it is an invaluable adjunct in the ornamentation of his little greenhouse at a period of the year when he can expect to have but little else in bloom, while to those more fortunate folk who can afford the luxury of residing far away in the open country what a wealth of colour and beauty does the Chrysanthemum reveal!

It is now nearly two hundred years ago since this plant first became known in Europe. It has been at various times mentioned and described by many of the earliest botanists under numerous names, and they differed materially as to the genus to which it was properly referable. On this point there does not seem to be any very accurate opinion until rather late in the present century.

There is good reason for supposing that its culture was the object of profound and enthusiastic devotion by the gardeners at China and Japan for centuries prior to the date of its importation into Europe. A well-known traveller in those countries tells us in one of his works that so great a favourite is the Chrysanthemum with the Chinese gardeners, to whom it was first known, that no persuasion will deter them from its culture, and that they will frequently prefer to resign their situations rather than be forbidden by their employers to grow it. He adds in support of this statement that he knew an English resident in that country who, without feeling the slightest interest in the plant, was compelled to allow his native gardener the pleasure of cultivating it solely on that account.

The Chinese often train the Chrysanthemum into curious and fantastic forms, such as pagodas, horses, stags, ships, &c., and another peculiar method of culture at Chea-yuen, where it is largely grown in most of the gardens, is the grafting of cuttings into stout stems of the *Artemisia indica* as a stock.

In another work by the same author, speaking of the town of Dang-o-zaka in Japan, he relates that the most curious objects to be seen were imitation ladies made up out of the flowers of the Chrysanthemum. Thousands of blooms were used for this purpose, and as these artificial beauties smiled upon the visitors out of the little alcoves and summer-houses the effect was oftentimes rather startling.

At the most popular of the Japanese festivals the people display effigies of their traditional heroes built up with piles of Chrysanthemum blossoms. Benkei, the Japanese Hercules, appears gorgeously appressed in white, purple, and yellow Pompons; the Sun goddess and other mythological persons are constructed out of heaps of these flowers.

In many other ways the Chinese and Japanese show their love for this plant, but probably in no more apparent and lasting manner than by employing the talent of their most skilful artists to represent its beautiful form and vivid colouring on their pottery, their household fabrics, and in numberless illustrated books.

It was from the Chinese that the English gardeners sixty years ago learned the practice of growing only one or two blooms on a plant and the application of liquid manure, Mr. Wells of Redleaf, near Tunbridge, being probably the first among us to adopt this style of cultivation. An identical method seems to be followed by the Japanese growers, who are stated to produce flowers of a prodigious size, allowing only one or two blooms to be perfected at the end of a shoot.

The mention of grafting recalls the fact that the experiment has also been tried in this country. In 1825 Lady Gordon Cumming of Altyre, who was an enthusiastic horticulturist, conceived the idea of grafting several kinds of the old Chrysanthemums on a common stock, but a change of gardeners about that period caused the experi-

ment to fall through. The object of this was to induce the plants to sport, a subject which will be touched upon somewhat later.

Much more recently Mr. Chas. Turner experimented in a like manner upon the Chrysanthemum, but on a larger scale. Eight or nine years ago he had more than 200 handsome plants worked as standards on 3 feet high stems; but assuming he had the same motive in view as Lady Cumming, his venture does not appear to have met with any degree of success.

The Chrysanthemum derives its name from the two Greek words, *chrysos*, gold and *anthos*, a flower, and is an extensive genus of composite plants ranged according to the Linnæan method in the second order of class 19 (Syngenesia). This genus embraces a very considerable number of species which are to be found growing in nearly every part of the known world, some of them being so far distant as the extreme north-east of Asia, while others are indigenous to many parts of western Europe.

In Asia the barren steppes of Siberia is the habitat of *C. absinthifolium*. Kamtschatka is that of *C. arcticum*. In Northern Africa is found *C. paludosum*, *C. carinatum*, and *C. pumilum*. In Asiatic Turkey *C. tanacetifolium* and *C. dancifolium*. Nearer home, in countries of a temperature somewhat approaching our own, there are in Hungary *C. rotundifolium*, *C. lanceolatum*, and *C. sylvestre*. In Austria *C. atratum*. In Spain *C. anomalum* and *C. radicans*. In France *C. montanum* and *C. persusillum*.

Nor is Great Britain without its representatives, for our well-known flowers, the Ox-Eye Daisy (*C. leucanthemum*) and the Corn Marigold (*C. segetum*), also belong to the same family.

Notwithstanding the lengthy list just given it may be observed that it is not by any means a complete one, inasmuch as Russia, Switzerland, Italy, Sicily, the Levant, Mexico, India, China, and Japan all contribute additional species of this important and widespread genus.

But of all these species those of India, China, and Japan are perhaps most usually included in the comprehensive word Chrysanthemum by the majority of people who are engaged in the cultivation of a beautiful and deservedly popular flower, not inappropriately designated the Autumn Queen. Of these alone, the named varieties of which at the present time number between two and three thousand, is it intended to treat in the following pages.

It has been remarked that the early botanists were at variance on the question of the name and genus of the Chrysanthemum, and a few references to some of them may be serviceable to the reader should he desire to go deeper into this matter.

Breynius in 1689, in his "Prodromus Plantarum Rariorum," most accurately describes the Chinese Chrysanthemum. He was the first author to mention it, and in that work he calls it *Matricaria japonica maxima*, giving also the Japanese name "Kychonophane." He makes allusion to six dissimilar varieties—the white, blush, rose, yellow, purple, and crimson, which he states to have been growing in Holland at that time. These plants were subsequently lost in the Dutch gardens, and it is strange to find that no further account of them can be traced, nor did the gardeners of Holland know anything of them when the Chrysanthemum was again introduced into Europe a century afterwards. Mr. Salter suggests that having called it *Matricaria japonica maxima* it was extremely possible that Breynius knew something about the small-flowering species we now call Pompon, a conjecture for which there is ample foundation, as he really does refer to a *Matricaria japonica flore minore* in his work just quoted.

The next mention of the Chrysanthemum is by Rheede, a Dutch gentleman, the author of the "Hortus Malabaricus," published in 1690, wherein it is alleged to appear that the Dutch were the first Europeans to cultivate the small-flowering variety, and that it was taken by them to their distant colonies of Amboyna and Malabar, where the name of Tsjetji-pu was given to it. An illustration of this variety figures in the forty-fourth plate of this publication.

Plukenet's "Amaltheum" gives the same plant under the name *Matricaria sinensis*, and his "Almagestum Botanicum" describes what is considered to be the Chinese Chrysanthemum as *Matricaria japonica maxima*, referring also to the Kychonophane of Breynius.

The learned Engelbert Kämpfer, who visited Japan in 1690, describes the Chinese Chrysanthemum in his work entitled "Amœnitates Exoticæ," published in 1712, under the name of *Matricaria*, as growing both wild and in gardens in Japan, being called by the natives Kik, Kikf, or Kikku. He mentions that there are many varieties, some of which blossom at all times of the year, and that they are the principal ornaments of the gardens in the towns. He distinctly describes eight with double flowers, and in addition to these he gives others with blooms of very different characters.

Rumphius in the year 1750 published the "Herbarium Amboinense" which is a description and account of plants collected in Amboyna and the adjacent islands. In this work the small-flowering species is described as *Matricaria sinensis*, and is stated to have been introduced from China, where it is known as Kiok-hoæ, and that it is called by the Malays "Serune." He adds also that in the latter

country it is cultivated in pots, and that the Chinese gardeners keep it dwarf and allow only one flower to blow.

The name of *C. indicum* as a species originated with Linnæus in the first edition of the "Species Plantarum," which came out in 1753. In that work the celebrated Swedish botanist divided the species into two varieties—one with single and the other with double flowers.

It appears in the "Hortus Kewensis" that it was in 1764 that the first known plant in England of the *Chrysanthemum*, which bore a small yellow flower, was growing in the Apothecaries' Botanic Garden at Chelsea, but this plant was at that period so little esteemed that in a very few years no trace whatever of it could be found in the place, and it was entirely lost.

There is, however, one fortunate incident connected with this variety. When Sir Hans Sloane conveyed the land forming this garden to the Apothecaries' Society in 1722 he inserted a covenant binding them to present to the Royal Society fifty dried specimens of distinct plants from the garden every year until the number reached 2000. In accordance, therefore, with the terms of the deed a specimen of this small yellow variety was with other plants presented by the Society's gardener, Mr. Philip Miller, to the Royal Society under the name of *Matricaria indica*, and is preserved in the British Museum (Miller's specimens, No. 2112, anno 1764).

This was no doubt the *C. indicum* of Linnæus, or, as it was afterwards called by Cassini the French writer on composite plants, *Pyrethrum indicum*, the varieties of which Mr. Salter says (in 1865) are now known as *C. matricaroides* or *Liliputians*. It was mentioned by Mr. Miller in his "Dictionary," eighth edition, under the heading "*Matricaria indica*." He says that it grows naturally in many parts of India, and that he received it from Nimpu (probably meaning Ningpo in China), where it grows plentifully; that it rises 1½ foot high, dividing into many branches with small flowers, to the colour of which he does not refer, about the size of the Feverfew.

Twenty years afterwards—*i.e.*, 1784, Thunberg, in his "*Flora Japonica*," describes the plant, which he asserts is Linnæus's *C. indicum*, and refers it to the preceding account of Kämpfer. He, too, gives the Japanese appellations, Kik, Kikf, Kikku, Kikof, and Kiko no fauna, which latter name is but a varied form of spelling the same word as that used by Breynius, the word fauna being used by the Japanese as expressive of elegance. Thunberg, in his description, says that this plant has many varieties, differing in colour as well as in the size of the flowers, and that there are single and double flowering kinds, that it is much cultivated in the gardens of Japan on account of the beauty of its flowers, that it grows spontaneously at Papenberg near Nagasaki, and other places in that country, and that it blooms in the summer and autumn months, and he tells us that in his belief it is the same plant mentioned by Kämpfer as *Matricaria*.

Loureiro, the Portuguese traveller, published his account of the plants of Cochin China called, "*Flora Cochinchinensis*" in 1790, and among them enumerated the *C. indicum* of Linnæus, but his description evidently belongs to the Chinese *Chrysanthemum*. He speaks of the variety of the colour of their flowers, which he states are white, blush, purple, violet, yellow, and red, differing in form and size, and that they are cultivated in the gardens of China and Cochin China.

Ramatuelle, in the "*Journal d' Histoire Naturelle*," calls it *Anthemis grandiflora*.

Willdenow, in 1801, placed it under the same genus, but gave it another specific name, calling it *Anthemis artemisæfolia*.

Another author, Mœnch, in the "*Supplementum ad Methodum Plantarum*," refers to it as *Anthemis stipulacea*.

The reader will certainly by this time have seen that the *Chrysanthemum* was the object even in those early days of something more than ordinary interest, and among other botanical writers who described it may be briefly mentioned such names as Ray, Sweet, Morrison, Vaillant, Persoon, and Desfontaines.

Having given a tolerably clear idea of the diversity of opinion existing among the botanists as to the true generic and specific name of the *Chrysanthemum*, the next point worthy of attention is the second importation into Europe, and it is at this event that the unbroken history of the *Chrysanthemum* really commences.—C. HARMAN PAYNE.

(To be continued.)

VINE BORDERS AT DALKEITH.

As the quality of these borders has been entered as a factor in the discussion relating to the cracking of Grapes, and have been described by Mr. Thomson as "poor and dry," it may give a more correct idea of what they really were like by quoting from Mr. Thomson's book on the Vine, wherein he describes how they were made, and as the present writer can also testify, correctly. First, the best loam from the deer park, top spit, was procured, and to this was added—to ten carts of it—two of lime rubbish, one cart of charred wood, including ashes, one cart of fresh horse droppings, 4 cwt. of broken bones, and, if to be had, 2 cwt. of horn shavings." This he (Mr. Thomson) "guarantees from his own ex-

perience" as a safe border, and he gave rich waterings of manure as well afterwards. It is not so long since, as will be remembered, the "heavier soil" of Clovenfords, as now described at page 402, was characterised as the "wretched" and "poor" soil in several of the papers and in circulars, as compared with Dalkeith borders!—NON-BELIEVER.

THE VERATRUMS.

THE *Veratrum* or *Hellebores* form a genus of plants possessing powerful medicinal properties; indeed they are highly poisonous, owing to the peculiar alkaline principle found in the root, and known as *veratrin*. A small dose of this administered to the lower animals is sufficient to cause instant death. It also acts with singular energy on the mucous membrane of the nose, exciting violent sneezing if only the most minute particle is taken. The leaves of *V. album* when reduced to powder form the well-known white hellebore which has been used so effectively in



Fig. 122.—*Veratrum album*.

destroying the Gooseberry caterpillar. But as being ornamental rather than medicinal we would notice this family of plants.

The name *Veratrum* is in allusion to the colour of the roots. They belong to the natural order of *Melanthaceæ*, and are hardy herbaceous perennials. Some of the species are handsome border plants of distinct and stately appearance. They add to a noble spike of flowers foliage which is distinctly ornamental by its stout texture, expansive form, and the bright green and regularly corrugated appearance of its surface.

The best of the species is *V. album*, and, except for the sake of variety, the others are not worthy of culture in our gardens. *V. album* is, however, a distinct and striking plant, and possibly, were it tender and required some nursing, it would be regarded as an ornamental sub-tropical plant. Certainly where foliage is expected to play a part in garden decoration this plant is worthy of a place; it also possesses features of attraction in habit of growth and flower. It is a native of the Alps and Pyrenees, and was introduced as long ago as 1548.

As an alpine plant of robust growth it is one of the best, and is worthy of a place on bold rockeries, and rooteries, and rustic mounds. It will

also flourish admirably in the open border, and is suitable to plant at the front of shrubberies. It will grow in any soil, but to flourish to perfection it should have deep rich loam, such as Rhubarb delights in. It will then grow to a height of 5 feet, and its bold white spikes are decidedly ornamental in the middle of summer.

V. nigrum, or the dark purple-flowered species, is much the same in habit as the preceding, but does not grow so tall, and is less ornamental; while *V. viride*, *V. parviflorum*, and *V. angustifolium* are destitute of attraction in the flowers, and are only interesting by their habit and foliage.

V. album, as the figure suggests, is worthy of cultivation, and is now being taken care of by those who possess the plant, but who have for a long time suffered it to be neglected. It is readily increased by division of the roots in the spring, just when the plant is making fresh growth, which is the ordinary mode of propagation. Plants may also be raised from seed.—*V.*

NATIONAL AURICULA SOCIETY (SOUTHERN SECTION) AND NATIONAL CARNATION AND PICOTEE SOCIETY (SOUTHERN SECTION).

I SENT the letter, published at page 484, with the statement of accounts of the National Auricula, Carnation, &c. Societies, thinking they would be subjects for legitimate comment. I take it from the figures that the sum £10 14s. 7d. for printing includes the unauthorised circulars issued by Mr. Dodwell, and Messrs. Mallam's account, £2 7s. 10d., is for the letters sent to Dr. Hogg, but which were unanimously repudiated by the Committee, and that the large amount of £9 7s. 2d. postages, carriage, and incidental expenses was incurred in distributing the said circulars.

Refreshments and hotel expenses are charged £10 13s. 6d. The balance is as stated, £16 7s. 8d. The season previous the balance was £39 8s. On referring to the balance-sheet it will be seen that Mr. Wright's expenses are not yet charged. That item requires a little explanation. In one of Mr. Dodwell's circulars (for they were in no sense the circulars of the Society) Mr. Wright was accused by Mr. Dodwell of perpetrating a fraud. Mr. Dodwell refused to withdraw the libel until legal proceedings were taken. The costs, it seems, were £9 19s.; auditors' charge, £2 2s.; other expenses, £3 6s.—total, £15 7s. This balance Mr. Dodwell has "no instant authority to debit the Societies with," but when he gets that authority the sum of £16 7s. 8d. will be reduced to £1 0s. 8d. There is, however, a sum of £1 5s. still owing to me for postages, so that instead of a balance of £39 8d. the whole amount has been wasted, and a debt of 4s. 4d. incurred to begin the year with.

The remarks about prize money may easily be disposed of. It seems I have beaten Mr. Turner. I tried to do so; but every penny I won was legitimate, and justly due to me. I have not the least advantage over any exhibitor.

This is the conclusion of Mr. Dodwell's balance sheet. After he has spent the funds entrusted to his care, alluding to myself he says, "The man most benefited, with a faithlessness never surpassed, and a fatuity absolutely bewildering, disrupted the Societies in his unbridled lust for power." [!] I need not say that the auditors appointed by the Societies have never seen the accounts. How could public accountants, knowing nothing of the Societies, know what ought to be passed and what ought not?—
JAS. DOUGLAS.

[Mr. Douglas has no occasion to defend himself against any charges, as all the members of the Societies know that he would not act otherwise than in a strictly legitimate and honourable manner, and the characteristic allusion above quoted will only make for him firmer friends. The balance sheet recently issued by Mr. Dodwell is the natural result of the absence of any rules for the governance of the Societies; and it is notorious that he systematically opposed the formulation of any rules that might impede his action. The sanction of the Committee has never been given for the inclusion of Mr. Dodwell's private expenses in the balance sheet of the Societies, nor is it likely to be given; and there is no authority for any moneys of the Societies to be disposed of by persons who may attend a meeting at Oxford summoned by Mr. Dodwell. Relative to the "man most benefited" by his connection with these Societies, we presume that man is he who has sold the greatest number of plants, and that was certainly not Mr. Douglas.]

THE INSECT ENEMIES OF OUR GARDEN CROPS. THE CUCUMBER AND TOMATO.

IN certain groups of plants we find that the caterpillar enemies of the flowers and leaves are very few, or perhaps are altogether absent. It is not always easy to explain this. We can understand that the harsh or tough leaves of some plants (those, for example, of many of our common evergreens) would not be attractive to caterpillars generally, the structure of their mandibles or jaws leading them to prefer soft buds and succulent leaves. Nor is it the poisonous character of a plant necessarily that keeps away caterpillars, since they will thrive upon species that are hurtful to man and the larger animals. In the Gourd family are plants poisonous and harmless, and upon the glossy-

leaved Bryony of our hedges one may search vainly for a caterpillar, yet as vainly upon the garden Pumpkin and the Vegetable Marrow—such at least is my experience. Nor is the Cucumber troubled, but that plant is not without bitter qualities, which might deter caterpillars, though not insects more minute, for it has visitors, numerous yet unwelcome, that will swarm upon it if they were permitted, especially under glass. But, for the most part, the gardener has so little difficulty in dealing with these, that his crop is not reduced by their means, unless an unhealthy state has been caused by mismanagement.

It does not require a man to be an entomologist in order that he should perceive the Cucumber has several kinds of fly or aphid, though he may not so discriminate amongst these familiar annoyances as to notice the varied shape of their bodies, or the length of their antennæ and legs. The shades of colour are obvious—there is a green aphid, suggestive of the common species of the Rose; a black one, like that occurring upon the Bean, and another of rather a brown hue. Under frames or handglasses it is the green fly which is chiefly to be dreaded, and obviously in such circumstances the insect enemies of this species have less opportunity for feeding upon it than when the plants are growing exposed. The brown fly occurs, I think, chiefly upon uncovered Cucumbers, and is, possibly, identical with the aphid of this hue which frequents the Hop. It is the black aphid of softwooded plants only that lives upon the Cucumber, not that of our fruit trees, and it will appear in houses or frames early, before indeed it might be supposed to be stirring. I daresay it is sometimes the case that eggs of some aphid, laid the preceding autumn, are hidden within Cucumber frames, and the warmth kept up hatches the insects out before the wanted period. Also, we may safely assume, with the Cucumber, as with other early-growing or forced vegetables, some of the first aphides we see have been deposited alive by hibernated females. By recent observations upon the Hop, it appears that wingless viviparous aphides come out in spring from the soil, and are principally concerned in leading off its succession of broods. Prompt measures are requisite at all times should these insects appear. The nature of the killer must be determined by the place and plant. In Cucumber houses there is no better plan than a tobacco fumigation, after which the plants may be washed with a solution of softsoap. Out of doors a wash of softsoap and tobacco may be used, or quassia water with soap, but opinions differ as the effect of quassia upon "flies" generally there; some correspondents say it is of little value, though destructive to many larger pests. Thrips, of one or two species, if it appears upon Cucumbers, is a foe of summer rather than spring, and it may be killed by tobacco, but more certainly by a wash containing sulphur.

Of those who have the management of Cucumber frames, there are few who have not, at some time or other, made acquaintance with the odd little creatures that form a part of the group called Collembola. One author, describing their habits, refers to them as haunters of decaying vegetable substances, feeders upon fungi in their earlier stage, and infesters of grasses, but this is too favourable a view of their habits. They do not resort to our frames merely for warmth or moisture, though liking these, but having opportunity, they will browse upon the young Cucumber fruits soon after they have set and reduce the crop. A white cloth laid upon a frame has an attraction for them. They gather there in swarms, and we generally find the assemblage is composed of different species, for while some leap away, others try to escape by running. Why species following the same mode of life should be thus differently equipped we are not able to ascertain. The leapers have been styled in some places "ground fleas;" and, in fact, they are to be found upon the soil around various vegetables and even flowers, though preferring the warmth of frames, unless too dry, for what favours the red spider is not wholesome to the Collembola. Doubtless during some seasons many seedlings are killed by this unsuspected enemy, and probably in houses and frames it is occasionally introduced with manure. The jump or spring of one of these insects is not performed in the manner of a flea or a grasshopper, but it is effected by a special organ at the tail, which has a broad piece and two jointed arms.

In the common genus *Smynturus* all the species have a sucker as well as mandibles, and it is imagined that some have a digestive apparatus like a crop. *S. fuscus* is the largest and most abundant, a species of a blackish-brown colour, and studded with tiny hairs; these occur in companies, usually from June to December. The bluish black *S. niger* is seldom observed, since it leads a solitary life. Sociable is the smaller *S. aureus*, a yellow species with black eyes, common from February to June. Sir John Lubbock has described at some length the playful habits of this insect, which, however, would not, I suspect,

favourably impress a gardener. Amongst the non-jumpers one of the frequent species is the purplish, rough-backed, *Anoura muscorum*, and the paler, velvety-skinned, *Lipura femetaria*, both feeders on vegetables that are succulent (when they can get them) and insects, it would seem, destitute of eyes. Some of the snake millipedes are apt to lurk in the Cucumber houses, and if they kill other species of insects, as is their wonted habit, they also infest the rootlets at times, to the weakening of the plants. *Cryptops hortensis*, a centipede allied to the preceding, turns up occasionally in the soil, but this species appears by its structure not to be a vegetable feeder.

The Tomato or Love Apple, introduced amongst the earliest American plants towards the end of the sixteenth century, has only of recent years acquired some amount of the repute to which it is entitled as a very palatable and wholesome addition to our vegetables. In Italy, for a long time past, it has been extensively cultivated, and many of our English gardeners have taken up the Tomato lately, but they have experienced a measure of disappointment through the interference of an insect foe which looks feeble enough. This is the species called rather irreverently the "Holy Ghost" insect (*Aleyrodes vaporariorum*), one that is nearly related to the aphides and Coccis, and which, like them, exhausts the plant it attacks by draining them of their sap or clogging their pores. This is a tiny creature, with wings of delicate white, remarkable for the peculiarity of having four eyes. In houses it is found that washing off the insects does not answer so well as fumigation; that, however, must be done with tobacco paper damped to produce a dense smoke, and one operation is rarely sufficient. This, of course, also destroys any aphids, thrips, and the scale, *Coccus Adonidum*, which has proved a nuisance occasionally. It is seldom seen unless the house has been kept too warm and dry. Out of doors the *Aleyrodes* may be treated with a solution of petroleum, made as has been already suggested in this Journal, by the addition of softsoap or soda. Wireworm is another insect that has been discovered in the act of damaging Tomatoes. Its favourite position is just at the base of the stem, where it may be checked by the application of soot or lime, or else the soil freely watered with hellebore tea, 2 ozs. to a gallon of water, which destroys this and most subterranean insects without affecting the plants.—ENTOMOLOGIST

ROSE SHOWS AND THEIR PROSPECTS.

AS far as I am able to ascertain I believe that the following are the fixtures for Rose Shows:—June 27th, *Canterbury, *Brockham; June 29th, *Maidstone; June 30th, *Bagshot; July 1st, *Farningham, *Cardiff, *Croydon, and *Farnham; July 2nd, *Bath, *Reigate, and *Hitchin; July 3rd, *Tunbridge Wells; July 4th, Crystal Palace, *New Brighton, Eltham; July 7th, National Rose Society at South Kensington; July 8th, *Sutton (Surrey); July 9th, Amesbury, *Hereford, *Norwich; July 11th, National Rose Society (Manchester), and *Sidecup; July 15th, *Moreton-in-the-Marsh; July 16th, *Wirksworth, near Derby, *Chriselton, near Chester, and *Helensburgh, N.B.; July 18th, *Wirral, Birkenhead; July 22nd, Newcastle-on-Tyne; July 25th, *Darlington. Ludlow and Torquay I do not know the dates of. The Societies to which an asterisk is prefixed are affiliated with the National Rose Society.

As usual, we receive all sorts of statements concerning the prospects of the various exhibitors, coloured by the varying changes of the weather. Thus, a fortnight ago one wrote, "It is impossible that Roses can be in by the date of our Show." Then came that burst of hot weather from the 2nd to the 7th, when the thermometer ran up to 80°. Forthwith the tone of the letters was altered. "If this weather lasts there will be no Roses left to show." Then on the 8th down came the thermometer and the rain. "Ah! this has just saved the Roses;" and so up and down as the thermometer varies are the expressions of either hope or fear, the moral of which is that it is of no use deciding on such points. We cannot alter the weather to suit one particular show day, and so let us take a somewhat wider view and see what the Rose season promises to be.

It will be seen from the list that there is no diminution in the number of exhibitors—rather the reverse. Some of the older shows have ceased, but new ones have taken their place, and those who are ambitious to enter the lists will find many opportunities for trying their spears. The metropolitan show of the National Rose Society ought not only to be an extensive but a very interesting one. The new classes for garden Roses, Moss Roses, and buttonhole Roses ought to bring a vigorous competition and add a new feature to the show; while in such shows as Darlington, Bath, Crystal Palace, Wirral, &c., the extensive schedules give good opportunities for all classes of exhibitors, and how are they likely to be prepared for the encounter?

As far as my tolerably wide area of observation enables me to form an opinion, we are, unless the unforeseen happens, likely to have the best Rose season we have had for many years. The very fine season of last year was most favourable to the ripening of the wood, which is one of the most potent factors in growing good Roses, as in fruit-growing. Everywhere the wood was hard and solid, instead of being "lithy," as it is called in these parts, and had the winter been severe the trees would have been able to withstand a good deal of frost; but the winter was not severe—on the contrary, it was very mild, although there was not that

high temperature which so often forces Roses into growth only to expose them the more severely to the subsequent frost. There was not that amount of growth in them that there was in the previous winter, nor were the bushes so sappy when the time for pruning came, nor have I heard much of late frosts injuring the young growth. I know that in my own garden Teas have been untouched, and my beds now in the open are full of bloom. We had this month some lovely rain, which seems to have kept the trees clean. I have seen very few aphides, nor have grubs been very troublesome. Taking all these things into consideration, and considering that we are now within a fortnight of our first show, I cannot but hope that we shall have a grand time amongst the Roses. I wo'n't prophesy. The last example of its folly is that of a writer in the *Times*, who was quite certain—"no manner of doubt at all," "had never been wrong," &c.—that we were to have an awful gale last night (Thursday, the 11th), and it turned out to be most perfectly calm! So I wo'n't prophesy, but only hope, and trust those hopes may be realised.—D., Deal.



WE are informed that MESSRS. SUTTON & SONS, READING, have from the 1st day of June last taken into partnership Mr. Leonard Goodhart Sutton, another son of the senior partner. To prepare himself for this position he entered the Royal Agricultural College, Cirencester, and passed with great credit through the botanical, chemical, geological, and practical agricultural courses there, and obtained the diploma of the College in December, 1883. Since then he has been residing for a considerable time amongst various growers in Germany, and has also visited all the principal seed-producing districts of England. Besides this he has passed through the routine of each department of the Reading establishment.

— AS will be seen from our advertisement columns, arrangements will have been made to hold an important EXHIBITION OF CHRYSANTHEMUMS, FRUITS, AND VEGETABLES AT YORK on November 25th, 26th, and 27th of the present year. Liberal prizes are offered in several classes, and three silver cups constitute the chief awards for a group of Chrysanthemums, thirty-six Chrysanthemum blooms, and six bunches of Grapes, three varieties. These are given by the Mayor, Sheriff, and the Vice-President of the Society. The Secretary is Mr. G. Lazenby, Spurrerigate, York.

— AT the last meeting of the ROYAL HORTICULTURAL SOCIETY, Mr. Sidney Williams, 21, Farringdon Road, E.C., showed a number of his teak wood baskets for Orchids of varied form, both useful and elegant. Examples of the Victoria dry glazing system were also shown by Mr. Sam Deards, Harlow, Essex.

— MESSRS. ANT. ROOZEN & SON, Overveen, Haarlem, send us a collection of FRENCH TURBAN RANUNCULUSES (*R. asiaticus superbissimus*) of unusually good quality, the blooms very large, full, and most varied in colours. It is surprising that such handsome plants are now so seldom seen in gardens.

— THE CHISWICK HORTICULTURAL SOCIETY will hold the annual exhibition in the Royal Horticultural Society's Gardens, Chiswick, on Thursday, July 16th, when substantial prizes will be offered in fifty-two classes for plants, flowers, fruits, and vegetables, a number of special prizes being contributed by friends of the Society. During several years past most interesting and beautiful exhibitions have been held by this Society, and the one to take place next month is expected to fully equal its predecessors. Mr. J. Fromow, Sutton Court Nursery, is now Hon. Secretary.

— MR. A. HARDING writes as follows respecting VEITCH'S EXTRA EARLY PEA:—"For the last few years I have entirely depended upon William I. as a first early Pea, and must admit it to be a good one for an early crop, being very prolific and fills the pods well, but last November I sowed at the same time a parcel of Veitch's Extra Early, with the result that with the same treatment as to soil, situation, and time of sowing, Veitch's Extra Early was fit to pick on June 6th, while William I. will be a fortnight later. The season is later this year than last, as I well remember picking the first dish of William I. Peas last year on the 30th of May. Anyone wishing for a good early Pea may sow Veitch's Extra Early, with William I. to follow, with

good results. William I. averages 6 inches higher than the other kind, but both are good."

— FRAGRANT FLOWERS.—The perfume manufacturers of Nice and Cannes crush 154,000 lbs. of Orange blossoms, 13,200 lbs. of Acacia flowers, 154,000 lbs. of Rose petals, 35,200 lbs. of Jasmine blossoms, 22,000 lbs. of Violets, 8800 lbs. of Tuberoses, and a relatively large amount of Spanish Lilacs, Rosemary, Mint, Lime, and Lemon blossoms every year.

— THE NEWCASTLE ROSE AND HORTICULTURAL SOCIETY (Staffordshire) will hold their first Exhibition in the Town Hall, Newcastle, on Tuesday, July 21st, this year. Prizes are offered in forty-one classes, fourteen of which are devoted to Roses; the others are for miscellaneous flowers, fruits, and vegetables.

— BANKSIAN ROSE BUDS FALLING.—A correspondent, "E. M. S.," writes:—"Can anyone enlighten me on the following subject:—We have two plants of the White Banksian Rose. One is planted at the foot of the house (south aspect) in good soil, well drained, as the foundation excavations would do that: it has grown fast, 20 feet in four years; it has not been pruned at all, but the leading growths were secured to the wall. Every year when the flower buds are the size of peas they drop, first turning yellow. I thought it might be drought at the roots, so it was watered freely with clear water, and liquid manure too. I thought at first it might be that it grew too fast, and therefore shed its buds. The other plant is growing on a west wall in stronger soil, not so much drained, treated in about the same way; that, too, does the same. I shall be very glad if I can be informed of the cause of this, and how to remedy the evil."

— EALING, ACTON, AND HANWELL HORTICULTURAL SOCIETY.—Announcements have been made that a special great anniversary Exhibition of this Society will take place in Gunnersbury Park, Ealing, on Tuesday, July 7th, and Wednesday, July 8th, by the kind permission of Sir. M. N. de Rothschild, Bart., M.P., and his brothers. In addition to granting the use of their magnificent grounds, they have also given the sum of fifty guineas towards the special prize fund of the Society, and Lady de Rothschild will distribute the prizes to the successful cottagers on Wednesday, July 8th. The grounds of Gunnersbury Park will be at the height of their beauty at this time, and Mr. J. Roberts, who takes a great interest in the Exhibition, is doing his best to make them specially attractive on this interesting occasion.

— THE EFFECTS OF WIND IN FERTILISING THE GROUND is remarkably illustrated, according to M. Alluard, by the very fertile valley of Limagne in Auvergne. The prevalent winds there are west and south-west, and traverse the chain of the Dômes, where are vast deposits of volcanic ashes. Much of this dust is thus carried to the Limagne valley, and settles there. of itself, or is carried down by rain or snow. As it contains a large amount of phosphoric acid, potash, and lime, it is highly fertilising, and its very fine state favours rapid assimilation. From observations on the Puy de Dôme, M. Alluard estimates the annual deposit at 348 to 400 grammes per square metre.—(*Nature.*)

— AT THE EVENING FETE, to be held in the ROYAL BOTANIC SOCIETY'S GARDENS, REGENT'S PARK, on Wednesday, July 1st, 1885, there will be an Exhibition of Floral Decorations, &c., when prizes open to all competitors will be offered in the following classes:—Arrangements of flowers, leaves, &c., for personal adornment, such as wreaths, chaplets, and the like, and also for use in dress-trimming and ornament. These may be prepared ready for attachment to the dress, or the dress may be exhibited as ornamented. Decorations for a dinner table 10 by 5, leaves of evergreens only (dried grasses allowed). Floral decorations arranged for a dinner-table 10 by 5. Floral decorations, hardy flowers only. Ditto, three groups, only one kind of flower in each group. Foliage and flowers, suitable for a sideboard. Group of plants, arranged for the decoration of a recess, alcove, or fire-place in a room. Standing basket, furnished with plants suitable for growing in a living-room. Hanging basket, with growing plants. Bridal bouquet. Ball-room bouquet. Group of flowers, &c., stalks in water, and neither tied nor wired. Flowers (either cut or on the plant) which only expand at night. The glass corridor and museum will be reserved for the exhibition of paintings of trees, plants, flowers on glass, china, wood, or other material.

— A NEW VINE PEST.—The unfortunate province of Bessarabia, which has been suffering grievously for some time from a visitation of locusts, is now subjected to a fresh misfortune. It appears that a destruc-

tive insect whose rapaciousness exceeds that of the phylloxera has made its appearance in the extensive Bessarabian vineyards. The insect is described as of similar size to the phylloxera, but of a different and unknown species. A special commission is leaving Odessa for Bessarabia in order to consult on means for the destruction of this new plague.—(*Daily News.*)

— THE schedule of the DARLINGTON ROSE SOCIETY announces that the Exhibition this year will be held in Southend Park, Darlington, on Saturday, July 25th, when prizes to the amount of £136 will be offered in twenty classes. In several the prizes are of considerable value, especially in the nurserymen's class for sixty single trusses, in which £8, £6, £4, and £2 are the amounts allotted. In the amateurs' class for thirty-six distinct, single trusses, the prizes are £8, £5, and £2. A large proportion of the prize money is contributed by friends of the Society, amongst whom may be mentioned the Earl of Zetland, the Marquis of Londonderry, Sir Joseph W. Pease, Bart., M.P., and Lady Alice Havelock Allan. The balance-sheet shows that the Society is in a most flourishing condition, a balance of £176 remaining in hand from the previous season's show. Much of the success that has attended this Society is undoubtedly due to the energy of the Hon. Sec. and Treasurer, E. R. Whitwell, Esq., who is well known as an enthusiastic and skilful rosarian.

— THE Austrian Central Tourist Club has addressed a petition (says *Nature*) to the Assemblies of all Austrian alpine provinces, to pass a law prohibiting the wholesale uprooting of EDELWEISS now carried on. The petitioners point out that hundreds of thousands of the plants are dug up and sent abroad, even to America, so that there is a fear that the favourite plant of all lovers of the Alps will be totally exterminated, except in a few remote places. In Switzerland, it is stated, for several years past there have been stringent laws in the several cantons against uprooting and selling the Edelweiss.

— AN American contemporary states that during the past season there were put up 48,508,248 cans of TOMATOES IN THE UNITED STATES, being one-third less than the pack of 1883, the decrease in acreage being heaviest in the eastern States. It is said that a farmer in Salem County, New Jersey, last season raised 83 tons of Tomatoes on 6 acres of land. The crop was sold in the canning establishment for 7 dollars (nearly 30s.) per ton.

PRUNING ORCHIDS.

I QUITE agree with Mr. Simpson where he remarks on page 467 that showing the results of experiments in London to be a very convenient condition to attach by those who are driven in a corner, and who think that because people do not comply with such conditions they are afraid to do so, and I trouble you with a few remarks. Why should any man be put to the trouble and expense of taking his plants it may be "scores of miles" to satisfy the whims of some sceptic, who will not, even when the plants are taken so long a distance, avail himself of the opportunity of seeing them, though he has only a mile or two to go, for fear he might be compelled against his will to acknowledge that he had been wrong? The first time I communicated with the Editor of the *Gardener's Chronicle* on this subject he noticed my remarks in his answers to correspondents. Here "T. B." took it up, and wished to know how it was the correspondent who had growths of *Dendrobium nobile* 3 feet long could not send them to South Kensington. I wrote and told him the reason why I could not show, at the same time offered to do so under certain conditions. To this "T. B." replied, and called it a cool piece of assurance. I then wrote a reply, which the Editor did not publish till after the plant was shown on the 21st of April. When I found the Editor had not published my reply to "T. B.," I wrote and told him that I had decided to take a plant to the meeting on April 21st, and asked him to inform "T. B." so that he might be there. Even then Mr. Baines failed to avail himself of the opportunity of going so short a distance to see the plant he desired so much to be sent, and which I had been at the trouble and expense of taking over sixty miles. On the 21st of April I was told a cultural commendation had been awarded for this plant, though there was nothing attached to show that such was the case. A few days after I received a note from the Secretary informing me that a cultural commendation had been awarded the plant I exhibited, and the same should be sent me after it had been signed at the next meeting; but this I have never received. The only reward I obtained for all my trouble was to get the Editor of the *Gardener's Chronicle* to publish my reply to "T. B." after it was too late to be of any use, for I had then taken the plant for him to see.

I think it a great pity the horticultural press should be used as a means for lampooning one another. Surely it was never intended for this purpose, but simply to state facts of each other's modes of treating different plants, and for the edification of those who are less experienced. I do not profess to be a great Orchid grower, and have no pretensions to state that which I know nothing about for the purpose of seeing my name

in print. I have tried the pruning system on several different kinds of Orchids with equal results. I have some *Dendrobium densiflorum* which have been pruned annually that have growths on them over 2 feet long, and which have had as many as eighty flowers on one raceme. They were not the puny clusters we see at the shows, but racemes from 15 to 18 inches in length. I suppose Mr. Baines would like me to take some of these to South Kensington for him to look at also. If any of your

each end with running ornaments and finials to each ridge, the general effect of which is very pleasing. Ornamental moulded pilasters with suitable caps and bases face each mullion, the cornice and transum being also in complete harmony with this arrangement. The brick foundations on which the building stands are about a foot above the floor line, thus giving somewhat more than the usual height to the sashes. Each of the three entrances to the winter garden has a separate vestibule,

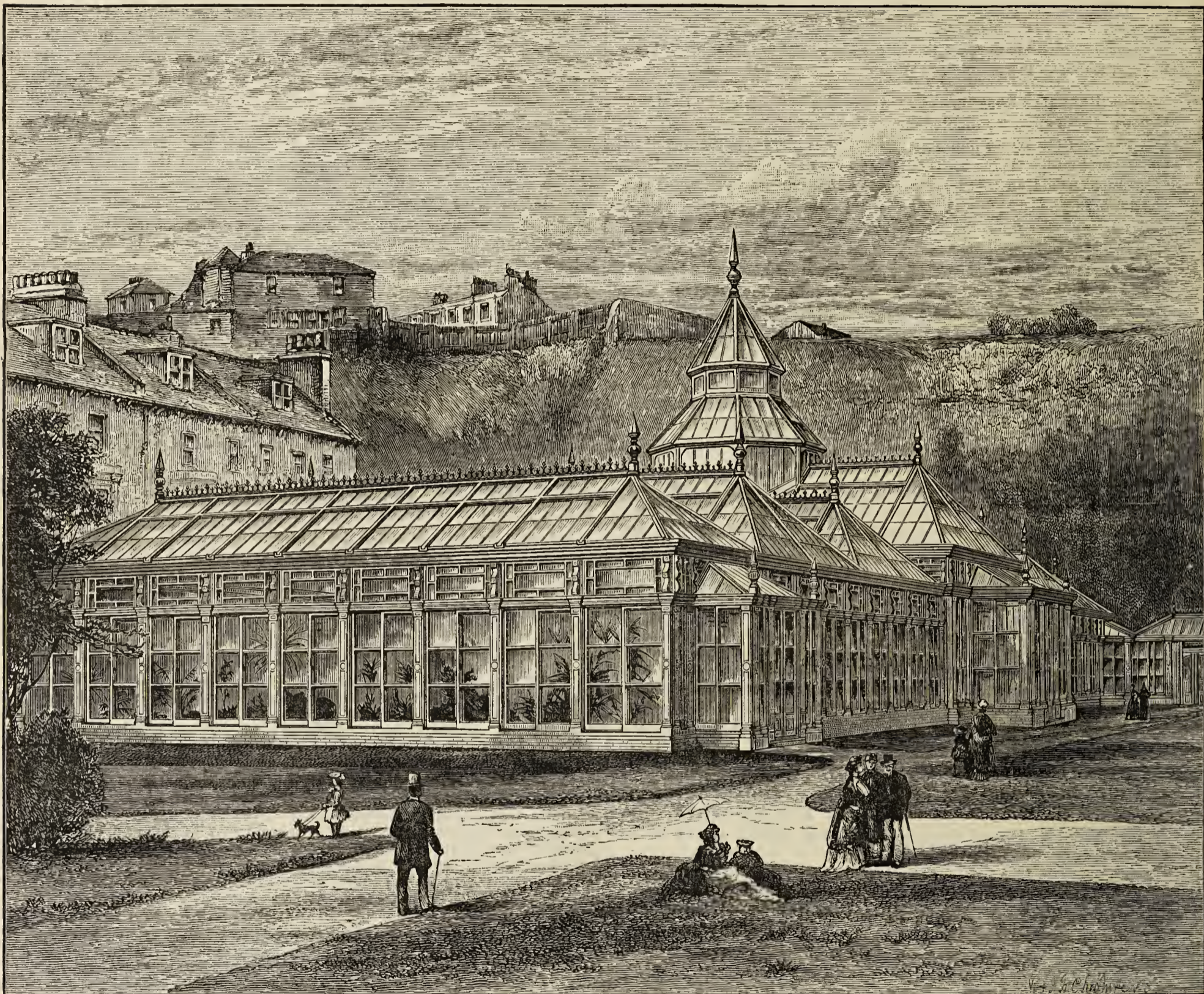


Fig. 123.—WINTER GARDEN, FOLKESTONE.

readers feel interested in the culture of these plants I shall be pleased at some other time to give my mode of treating them.—H. C. PRINSEP.

THE WINTER GARDEN, FOLKESTONE.

At this famous marine resort a spacious winter garden has just been erected for the South-Eastern Railway Company at their Royal Pavilion Hotel. The general character of the building can be at once seen on reference to the accompanying view, and this will enable our readers to follow the description we purpose giving. It will be seen that the structure is built on what is known as the "ridge-and-furrow" principle, and consists of seven spans of various widths, the centre one being 31 feet and surmounted by an octagonal lantern. The frontage is about 168 feet, and the general width about 51 feet. The roofs are hipped at

and one of these is connected with the hotel by a glass corridor, thus enabling visitors to enter without exposure in any kind of weather, a boon which will be gratefully appreciated by those in delicate health.

The building is warmed by two of Weeks's patent duplex upright tubular boilers. The hot-water apparatus is fixed in chambers below the floor line, covered with an ornamental iron grating, and so arranged that an even temperature can be maintained in the most severe weather.

That necessary adjunct, the boiler house, is placed at one end of the building of which it is made to form a part, being a glass structure in the same character.

The interior has been laid out as a promenade interspersed with beds of a suitable design, having ornamental edging. These beds are planted with ornamental shrubs and plants, and when fully established will present a most effective and charming feature.

The winter garden was designed and the whole of the works carried out by Messrs. J. Weeks & Co., Horticultural Engineers, King's Road, Chelsea.

Some idea of its magnitude may be gathered from the fact that the weight of prepared wood, glass, and ironwork alone was upwards of 110 tons.

SOME AURICULA NOTES.

WHAT a revolution has been made in the history of Auriculas during the last few years! In times past we used to see occasional articles in the gardening papers giving very precise and definite instructions as to what to do and what not to do in cultivating these beautiful flowers. I do not know that these articles really exerted much influence on growers of this plant. However, on those who did not cultivate them, but who would have liked to do so, I have no doubt that most, if not all, of these cultural notices had a decidedly deterrent effect. At least I know it was so in my own case, and if it had not been for the kindness of a practical grower who presented me with a small selection, which gave me an opportunity to prove the delusiveness of much that was written about the difficulty of growing and the risk of losing valuable sorts, I might have remained much longer unacquainted with this most loveable Alpine.

Only a few years ago I was alone as a grower of Auriculas in this district. This year I know of about a dozen who are forming collections, all in the immediate neighbourhood, and from what I learn from other districts I should be inclined to prophesy that Auriculas will, in a few years, be considered necessary plants to grow in every garden. Perhaps they may not obtain that amount of loving attention for which they so well repay their friends, but it is something to know that they are breaking in on the Chinese Primulas and Cinerarias which every greenhouse must have in their season.

The Auricula is a flower which is essentially of the homely or domestic type. In order to enjoy its beauties and to give it justice it requires to be treated as a friend. For that reason it is of all others the flower of amateurs. The varieties have little foibles which must be found out and treated with respect at the risk of the slighted ones failing to show off at their best. That may be one great reason why gardeners, with affections perforce divided among so many floral charmers, fail, as a rule, to shine as growers of the Auricula. I would entreat those who intend to grow, or are growing, a selection of these, to make friends with their plants at once, and personally to look to their little wants. They will well repay any extra care.

In presenting a few cultural notes I would not think of going over the whole field lying before us. On such matters as the best kind of structure in which to grow the plants, the relative excellencies of glazed or unglazed pots, of "long Toms," or ordinary everyday receptacles, I will have nothing to say. In these things I take what I can get and do not grumble on account of these matters if in anything failure is apparent. The first thing I would desire to note is the tap root. Anyone who attempts to grow the Auricula, and who neglects a systematic overhauling of "taps," is doomed to failure. I very soon found this after beginning my novitiate; and as the result of a few years' experience I found that the more tap root a plant had the less satisfactory was its behaviour at the flowering period, and indeed all the season through, so I determined to do with as little tap root as possible. The effect has been improved results in more ways than one. Though I am not writing exactly for novices, it may not, on that account, be desirable to leave out altogether a reference to the place "tap" roots occupy in the economy of Auricula life. As a matter of fact they are not roots at all. As the foliage of each successive growth after fulfilling its mission is removed, the stem on which the leaves were supported is left behind, and from the fresh portion of stem thus left bare, roots are protruded for the nourishment of the plant. It is the endeavour of the plant to keep this portion of stem out of the soil, and to send down its roots Pandanus-like into the surface of the ground. The grower, on the other hand, keeps the bare portions of stem buried underground, in order that the fresh-made roots may have full benefit of the results of his catering to the wants of the plant. Where a timid administration is in force a fear prevails that by removing too much of this so-called tap root the plant may be damaged; and if this policy so far prevails as to induce the leaving of a portion of this underground stem, which is practically devoid of all vitality, though apparently still fresh, then in the course of the season decay may, and often does, supervene, and the life of the plant is endangered, while in any case its health deteriorates.

The Auricula forms no exception to the general rule, that a strong young plant—fully developed—is superior to an old one. I have found that for myself, and I have also found that the simplest mode of effecting a radical improvement in old plants with a super-abundance of tap roots is to make a cutting of the top of the plant and keep the old stump for any offsets which may be induced to appear, and when these are large enough to detach to throw the rest away. Tops taken as soon as the plants have flowered, established in small pots in light open soil, and when established shifted on into larger pots to flower in, make good plants the first year. About fifty tops are at present undergoing the first stage of the above process in our small collection. They are easily established in a cold frame, and are kept closely shaded from the sun, and shut closely from the air for two or three weeks until the new roots begin to run. I always endeavour to have a few roots showing before taking the tops.

Another matter of some importance is that connected with the increase of plants of any particular sort. Some allowed to grow and increase in the ordinary way of making offsets, are so extremely shy to break that

Practically the stock of plants may be said to remain always about the same in number. Some of these sorts are also among the finest varieties, consequently their price has always been maintained through the demand exceeding, or at least keeping pace, with the supply. I have, in my endeavour to raise quickly a stock of such varieties, adopted two methods of increase, the first of which is connected with the mode of top-striking above referred to. When a top is removed from a healthy plant it invariably follows that latent buds immediately push from the stem left, and duly become strong enough to be detached and made to form plants themselves. Thus, in addition to the fifty tops which are now becoming established plants in my collection, there will average some three offsets from each cut-down plant; but as we do not care to behead plants until they are becoming somewhat too aged to produce the best results, it occurs that buds do not always break so freely on these as they should do. To make certain of a good number of offsets we modified our plan, and on those plants which we wanted to increase rapidly we have most successfully, for three or four years past, adopted a less vigorous method. It is as follows:—Any particular plant we wish to increase is watched, and the young growth which follows the flower-spike removed as soon as it is possible to do so effectually. The result of this is, that young growths are forced to break, and they do so in greater numbers than if the entire top were removed. I have practised this method on a large number of plants, mostly valuable ones, such as Healdy's George Lightbody, Prince of Greens, John Simonite, Conservative, Alexander Meiklejohn, &c., and in every case with success. It may be noted that some varieties, as, for instance, George Lightbody, Beauty, and C. J. Perry, have a habit of sending up offsets from the bottom of the tap root. After the other offsets are removed the best plan is to shake out the old stump and repot in a smaller-sized pot, so that these back offsets may be as short in the root-stock as possible.

As to the management of offsets I find that February is the best time to remove these. Our practice is to take off all that are ready, large or small, at that time. We keep the offsets in a late Peach house for two or three months, and there much more rapid progress is made than if kept in cold frames. The first thing to see to is that they become established quickly, and to this end rather small pots are used, and the strongest and most forward are potted as they become ready. It is bad policy to allow the plants when young to be starved in small pots. By judicious treatment and shifting as required many will throw good trusses the first year, and, in fact, while the plants are young and the roots in vigorous health it is much better to shift on at the usual summer potting than to shake such plants out.

Referring now to this annual part of the treatment, our stock is repotted as soon after the flowering is past as possible. This year we had finished before May was out. I think it is much better for the plants, as strong roots are formed about that time, and these get the full benefit of new soil, while the young growth is also benefited at an early stage. As to any bad effect early potting has on the plants blooming in autumn, I fail to see wherein it lies, and at any rate it is doubtful if the plants be not more able to get over any bad effect from autumn flowering more readily than they do over late potting. Autumn blooming, however, seems to be more a local effect as to time than anything else; hot weather in August followed by damp is a very sure producer of flowers in autumn, and a more certain deterrent is, I believe, to be found in a wise discretionary treatment at that time than by any other means.

As to matters of general treatment I have this season tried a few surface dressings of manure, and though I should not like to say that the results have proved conclusive as to benefit therefrom, I am inclined to think the manure has been beneficial. It only remains to say on this point that anyone experimenting thus must do so with extreme caution, owing to the slight growth made by the plants, and consequently their inability to throw aside the effects of an overdose. Give plenty of water throughout the spring and summer months is advice that needs reiterating. Another point worth emphasising is this: Shade from sunshine, and keep the plants cool night and day throughout the summer months. A practice in potting worth noting is to keep the plants well down in the soil. This advice is contrary to much that has been written thereon, but nevertheless the advice is good.—B.

SOUTH ESSEX HORTICULTURAL SOCIETY'S SHOW.

JUNE 11TH.

DURING twenty-nine years this Society has laboured to improve the horticulture of Southern Essex, and there can be no doubt that such a long and useful career has accomplished in a large degree the object which induced its foundation. Like all similar institutions, its fortune has varied, and sometimes the weather has rendered all the efforts of the Committee unavailing; but such mishaps have been few, and it is remarkable that for a number of years the weather has been exceptionally favourable on the show days. This has unquestionably tended greatly to insure the financial success of the Society. In late years another highly important attraction has been furnished by the liberality of the President, J. G. Barclay, Esq., who has not only generously permitted the Show to be held in his grounds at Knotts Green, but has also thrown open his charming garden to all visitors. The assistance this has rendered cannot be fully estimated, but in the opinion of many it has induced the attendance of a greater number of persons than the Show itself. Much credit is due to Mr. Barclay for this act, and many more gentlemen might advantageously follow such an excellent example.

This season the Show was held on the usual site, and proved one of the best of recent years both in the number and quality of the exhibits, which filled two large marquees. The principal of the two was devoted to the specimen plants in competition, of which the leading features were the stove and greenhouse plants, the Ferns, and Orchids, the last named occu-

pying nearly the whole of one side. Many of the specimen plants were extremely well grown, fresh, healthy, and profusely flowered, the weakest portions of the Show being the foliage plants, Pelargoniums, Calceolarias, and similar classes. Cockscombs were very poor, and at least two collections were quite unfit for exhibition. The vegetables were not numerous but good, and the stands of flowers were in several instances remarkably tasteful. In the general arrangement of the Exhibition and the conduct of the business connected with it, Mr. G. E. Cox, the Secretary, well merited the praise accorded him by the Committee and the visitors.

STOVE AND GREENHOUSE PLANTS.—It was at one time feared that there would be a considerable diminution of the exhibits in the classes for these plants, but happily these alarms proved unfounded, and the display was equally as good if not better than usual. Particularly notable in the leading classes were the admirably grown specimens from Mr. Donald, gardener to J. G. Barclay, Esq., Knotts Green, which were so good at Waltham Abbey the previous week. They did not appear to have suffered in the least for their journey and were as fresh as could be desired. With eight plants Mr. Donald was easily first, showing *Clerodendron Balfourianum* 5 feet high by 4 feet in diameter and profusely flowered; *Ixora Fraseri* 3 feet by 4, extremely well flowered; *Genetyllis tulipifera* of globular form, 4 feet by 4; *Hedera fuchsoides*, about the same size, both excellent in all respects, and as good specimens of the kind as are seen at shows; *Erica Cavendishiana*, 6 feet high, was also in good form. *Erica Kingscottiana*, *Statica profusa*, and *Aphelexis purpurea*, all of similar size to the *Hedera* already named and superbly flowered. The second place was gained by Mr. J. Young, gardener to O. E. Coope, Esq., Brentwood, whose most notable plants were *Alonsoa incisifolia* 4 feet in diameter, *Bougainvillea glabra*, and *Stephanotis floribunda*. For six miscellaneous plants Mr. Donald again secured first honours, his specimens comprising *Dracophyllum gracile*, globular, 3 feet by 3; *Diplacus glutinosus*, 4 by 4, very handsome, and flowering exceedingly freely; *Pimelea mirabilis*, *Croton majesticus*, *Erica Kingscottiana*, and *Boronia pinnata*, all of similar size, fresh healthy little plants of a type by no means too common. Another class was provided for four stove and greenhouse plants, in which Mr. Monk, gardener to W. Fowler, Esq., Leytonstone, gained the leading prize with even and neat specimens of about the same size as Mr. Donald's, those represented being *Stephanotis floribunda*, *Bougainvillea glabra*, *Statica profusa* flowering freely, and *Azalea Souvenir de Prince Albert*. Mr. Drummond, gardener to D. McLean, Esq., followed with two fairly good pyramidal *Azaleas* and a rather poor *Anthurium Schertzerianum*. Mr. Barton, gardener to H. W. Carter, Esq., Walthamstow, was third, his best plant being a large *Hydrangea*. There were several competitors with single specimens, but three of them were far ahead of the others. Mr. Donald was first with a very handsome *Ixora Fraseri* 5 feet high, nearly as much in diameter, and bearing a number of large trusses of its bright flowers. Next to this was placed a superb plant of *Statica profusa* from Mr. J. Young, which was nearly 6 feet in diameter, in most vigorous health, and grandly flowered. The third honours was taken by Mr. Monk, who staged a remarkably fine *Clerodendron Balfourianum*, large, healthy, and flowering profusely. With four *Heaths*, Mr. Donald was again the premier exhibitor, his superb specimen of *Erica æmula* being in capital condition and loaded with flowers; *E. Cavendishiana* was larger and almost as well flowered, *E. tricolor Wilsoni* and *E. elegans* being the other two varieties.

ORCHIDS.—An uncommonly good display of Orchids was provided for a local show, and there are many large provincial exhibitions where less extensive and interesting collections are obtained, yet the prizes at Leyton were small, none exceeding £2, and for the group £1 was the leading prize. We have seen collections of much inferior merit gain prizes three or four times the amount. There were no huge specimens, but the plants were all healthy, and in most cases well flowered, and such are more creditable to the cultivator than those formed by massing a dozen together in one pot. A class was provided for eight Orchids, Mr. Gilks, gardener to A. Borwick, Esq., Higham Hill, Walthamstow, securing the chief honours with excellent examples of *Cypripedium barbatum*, twenty flowers; *Dendrobium thyrsiflorum*, three spikes; *Lycaste Skinneri*, extremely good, a very pretty variety, with twenty-eight flowers and buds; *Masdevallia Lindenii*, *Odontoglossum Halli*, three long spikes; *Cattleya Mendeli*, *Lælia purpurata*, and *Oncidium macranthum*. Both these and other plants shown by Mr. Gilks are supplied with a fish manure, to which reference was made at the Orchid Conference recently, and it is only fair to state that they are remarkably strong, but, as with other manures, it requires to be used with care, as it is easy to injure a plant by too great a liberality. Mr. Ebbage, gardener to W. Houghton, Esq., Walthamstow, was a close second, his most notable plants being *Maxillaria tenuifolia*, with scores of flowers; *Lycaste Deppei*, eighteen flowers; *Cypripedium villosum*, twenty-four flowers; *C. Parishi*, six flowers; and *Oncidium macranthum*, sixteen flowers. Mr. Merritt, gardener to R. B. Ashby, Esq., Walthamstow, took the third place, showing *Cattleya Mossiæ* with fourteen flowers; *Cypripedium barbatum*, twenty-four flowers; *Dendrobium Pierardi major*, *Odontoglossum cirrhosum*, and *Brassia verrucosa*. An extra prize was awarded to Mr. Drummond, who had two plants of *Brassia verrucosa* with six to eight spikes each, and several healthy *Cattleyas*. Mr. W. Jones, gardener to E. Tidswell, Esq., Chigwell, won first honours with four Orchids, having *Lælia purpurata* with seventeen flowers, a good variety; *Cattleya Mossiæ* with thirty-six flowers; *Phalenopsis grandiflora*, and a *Cattleya* named *Horacii*. Mr. Foster, gardener to R. Johnson, Esq., Walthamstow, followed, staging several good plants, the best being *Cypripedium barbatum superbum* with fifteen flowers. Mr. Donald was third with *Dendrobium Bensoniæ*, admirably flowered, and Mr. Monk was adjudged an extra prize, *Brassia verrucosa* and *Dendrobium Dalbousianum* being especially good. The plants entered in the class for three Orchids were small, but all were flowering, and they were quite satisfactory as regards health. Mr. Short, Walthamstow, led with *Lælia purpurata*, *Cattleya Mendeli*, and *Masdevallia Harryana*. Mr. G. E. Cox was a close second with *Sophranitis grandiflora*, *Odontoglossum Alexandræ*, and *Cattleya Skinneri*; Mr. Pethers, Walthamstow, following with *Cypripedium Lawrencianum*, *Odontoglossum Pescatorei*, and *O. Alexandræ*.

The best group of Orchids was contributed by Mr. Ebbage, who had a large number of healthy plants tastefully arranged with Ferns. *Odontoglossums*, *Masdevallias*, *Cypripediums* and *Cattleyas* predominated, other

notable plants being *Maxillaria venusta*, white; *M. nigrescens*, brown; *Cypripedium Dominicanum*, *D. ciliolare*, *Burlingtonia candida*, *Oncidium divaricatum*, and *Cryptochilus sanguineus*, a rare and curious little Orchid with red flowers, the sepals forming a close tube terminating in three points enclosing and concealing the petals, lip, and column. Mr. Gilks was adjudged the second prize for a similarly good group, containing larger plants, but not quite so many rarities. There was, however, a good specimen of the curious British Orchid, *Aceras anthropophora*, with six spikes of greenish flowers; *Odontoglossum angustatum* with narrow sepals and petals, yellow barred with brown. The best single specimen was Mr. Monk's *Vanda suavis*, which had three spikes of eleven flowers each, and was clothed with good foliage to the pot. Mr. Gilks was second with *Cymbidium Lowianum* bearing two strong spikes, one 5½ feet long and having thirty-one flowers. Mr. Ebbage was third with *Cypripedium Lawrencianum* in good condition.

FOLIAGE PLANTS.—These were not quite so numerous as at some previous shows, but there were sufficient to avoid an undue preponderance of flowering plants. For six specimens Mr. Donald secured the chief award, of which the best plants were *Croton variegatus*, *Dasylyrion acrotrichum*, and *Dæmonorops palembanicus*. The second place was taken by Mr. Young, who had an uncommonly handsome example of *Croton angustifolius* 6 feet high and beautifully coloured. Mr. Monk was third, showing *Alocasia metallica* and *Kentia Belmoreana* healthy and fresh. Mr. Young was first with one specimen, *Croton Weismanni* over 6 feet high, handsome in shape, and finely coloured. Mr. Donald was second with an immense *Croton angustifolius* 7 feet high and nearly as much in diameter, a grand healthy specimen, but rather deficient in colour.

The Ferns were as usual very satisfactory, and the British or hardy Ferns were especially so. Mr. Donald, who scored so many successes throughout the Show, was again the premier exhibitor of six exotic Ferns, contributing *Dicksonia antarctica*, *Cyathea princeps*, *Adiantum cardiochloana*, *Gleichenia Mendeli*, *Cyathea spectabilis*, and *Adiantum gracillimum* of moderate size, but very fresh. Mr. Barton was second, his best plants being *Adiantum Sanctæ Catherinæ* and *Davallia Mooreana*. Mr. Drummond followed showing *Adiantum farleyense* and *Asplenium bulbiferum* in capital condition. Mr. W. Jones had the best four Ferns, *Adiantum cuneatum*, *A. Sanctæ Catherinæ*, *A. formosum*, and *Gymnogramma chrysophylla*, 3 to 4 feet each in diameter, and extremely vigorous. Mr. Gilks leading with half-dozen British Ferns, were exceedingly good, and well deserved their position. The varieties represented were *Athyrium Filix-fœmina plumosum*, *A. F.-f. Victoriae*, *Lastrea Filix-mas thelypteris*, *L. F.-f. cristata*, *L. F.-f. crispa*, and *Polystichum angulare proliferum Holeanum*.

Fuchsias, *Calceolarias*, *Pelargoniums*, and other plants added more or less to the attractions of the Show, but of these the *Fuchsias* were decidedly the best; Messrs. Winter, Young, Barton, and Monk having well-flowered plants.

Cut flowers were numerous shown, most of the prizes being won by exhibitors already named, but three extremely graceful stands of flowers from Mrs. Young deserve special mention, as they were most tastefully arranged. The flowers employed for the upper part of the vases were *Cornflowers*, *Rhodanthes*, *Gloriosas*, *Oncidium*s, *Brizas*, white *Pinks*, and *Fuchsias*, the last named forming with *Isolepis* a charming fringe round the edge of the uppermost trumpet of the stand. At the base were *Pæonies*, *Lilies*, *Gladiolus Colvilli albus*, *Fuchsias*, and *Ferns*. The *Gloriosas* had a particularly good appearance, and altogether the arrangement and material employed were as satisfactory as any we have seen, partaking of the lightness and grace distinguishing Miss Cypher's stands of a similar description.

Vegetables were not so numerous, but clean and good, Mr. Donald's first-prize collection of eight sorts being the best and most neatly put up we have seen this season.

METHODS OF POTTING.

ALTHOUGH the putting a plant in a pot appears at first sight a very simple process, and, indeed, is so with regard to plants of no very particular value, yet to many plants or families of plants it is doubtless of the first importance. Of what use would it be providing the best of garden structures, securing a sweet and wholesome atmosphere, &c., if our most delicate and choice plants were badly potted and their soils in consequence become sour and stagnant? And, to ask further, what was it in former days that caused garden pots in greenhouses to be so liable to a coating of green scum, and the plants so particularly liable to the depredation of insects? Bad soils and bad pottings, doubtless, as predisposing causes.

One of the first improvements that took place in modern potting processes was the use of coarse and turfy materials instead of the finely riddled composts of former days. About the period of this advance people began to turn their attention to the make of garden pots also, and it was speedily discovered that the pots which had been so long in use were anything but faultless. Thorough drainage as a principle in potting was speedily a growing question, and received the utmost consideration from practical men in all quarters who were well up in their profession.

These great improvements doubtless received an extra impetus through the introduction of so many choice plants, many of which, especially some of the finer-rooted, commonly called New Holland plants, showed evident signs that they would not thrive under the old system. The commencement of the exhibition era also much facilitated progress of the kind, and now it may be said that British gardeners can grow, in the very highest perfection of which it is capable, almost every plant placed in their hands, from whatever clime or under whatever conditions in its own locality.

The first thing I would direct attention to is two modes of potting quite distinct. I do not say that there are but two ways, but, for the sake of simplicity in the affair, we may at once reduce them to two modes: all others are in the main modifications of them. One may be characterised as loose potting, the other as firm or close potting. The loose mode is applicable in the main to annuals and softwooded plants, and, I may add, to most plants of what may be called ephemeral character. The latter class are required to make their growth as speedily as possible, in conformity with their habits and the services they are qualified to render; the former class requires durability in the texture of the soil rather than rapid excitement.

Now, plants of these two classes ought to be potted very differently; and, in order to illustrate the matter, let us take two plants, a Balsam and a Heath. These two everybody is familiar with. In potting the former a compost is generally used, and this, in the ordinary language of gardeners, means a mixture. When such is used it becomes necessary that, in order to have it uniformly mixed, the soil be passed through a riddle or sieve. This compost is filled in lightly round the Balsam plant, and a shake or two, with a very slight pressure perhaps in filling, makes all right; but in shifting a Heath this process will not answer so well by any means. Here the skilful cultivator, after procuring his sandy and fibrous heath soil in a dryish condition, breaks it up into lumpy fragments, and these he places around the ball, packing them somewhat tightly, some even thrusting fragments of stones amongst the turfy material. As for the finer particles which fall out in the handling, he uses little of this but to coat the surface over.

As to watering newly potted or shifted plants, I may just show that this differs as much with these two classes as the potting or shifting process. The Balsam alluded to would in most cases benefit by a good watering with a fine-rosed pot; but the Heath would require some extra caution. Most of our hardwooded plants when repotted require that their ball of earth should be in a moist condition—not wet, but equally moist throughout. This secured, and the potting performed somewhat similarly to the Heath before alluded to, light waterings, not over-frequent, with the spout of the pot will prove most suitable. When I pot Camellias I always make a point of so dressing up and pressing the surface of the new soil in the pot as to leave the stem in a small concavity. This induces the water when applied to penetrate the old ball, a thing I hold to be of much importance until the new soil is filled with roots, when the surface may be made perfectly level. Many a valuable hardwooded plant is ruined by loose potting, the water in such cases rushing through the loose soil to the entire desertion of the old ball, the loose soil being speedily converted into a kind of mud.

I have before alluded to the use of very fibrous soil as one of the chief improvements in modern potting; let me here caution the young beginner against potting with wet soil. If soil in a wet state must be used, then all my advice about firm potting falls to the ground. My practice is this:—Turfy or fibrous loam, having lain about six months in the compost yard, is chopped down when very dry with a sharp spade, leaving lumps the size of a large potato in it. This being well handled a considerable proportion of the more loose soil falls away, and this is put aside for ordinary purposes. The turfy material is now housed, no riddle being used; and this will lie for months in the potting-shed if in a body, and prove always in excellent order for potting.

Heath soil, peat, &c., are served in a similar way; and such materials in such a condition are qualified, either singly or in composts, to provide for every need in the plant way.

I must now recur to drainage matters. Here, again, practical men make a difference. Annuals, and many softwooded plants which soon come to perfection, require a very moderate amount of ceremony of this kind. A crock carefully placed over the hole, and over that a layer of the coarser materials of the compost, will generally suffice, although I usually throw a little charred material over the crock, or a piece of moss. When, however, we take the more delicate of the hardwooded class, specimens which have to remain a long time in their pots, and, indeed, plants of various kinds which are known to be somewhat shy rooters, the case is very different. Even in Camellia potting, for my part, I deem it expedient to be very particular; and strange it is that some of our continental neighbours think and act so differently, for I have lately read that they are in the habit of simply thrusting a lump of turfy peat in the bottom of the pot, and also pot their Camellias almost entirely in peat. But it must be remembered that to grow young stock into a smart, saleable appearance, and to sustain large specimens in high blooming condition for many years, are two very different affairs. There can be little doubt that much of the failure so frequently complained of in Camellias, when in the hands of amateurs and small cultivators, arises in no small degree from the mode of potting them. Razors made to sell and razors made to cut are two very different things. I find also that where liquid manure is frequently used there is the greater need of sound drainage, as, under the best of circumstances, it has a tendency to close the interstices of the soil, especially if fine soil be used. I, however, bid utter defiance to this tendency by the use of very turfy and lumpy soil.

After all the care we can use in potting processes we may remember that it lies in the power of an ignorant and heedless waterer to nullify all our efforts in a very few weeks. This is a most serious consideration. The worst of it is that we scarcely know how to offer a rule to those who are careless or ignorant. A thoughtless person can never be relied on for watering; but the term "thoughtless" will scarcely express what I mean, for we have no cases of thorough mental inanition in those who labour with their hands. What I really mean is this—that no person can water plants well unless he actually cares for their welfare. Absence of mind is, therefore, here an unfortunate affair.

One piece of advice may here be given to the uninformed. When plants are established in their pots, and require water, let them have a thorough watering, unless some special reason exists for dealing otherwise with them. Plants growing fast or blossoming heavily generally require more water than at other times; and plants sinking into a state of comparative rest, possibly shedding a portion of their foliage, bulbs, &c., require a very moderate amount of moisture; indeed, in many cases, none at all.

One other great feature in modern plant culture is the constant war that is sustained against the insect enemies of plants. On this, however, it is no part of my present purpose to dwell; I merely point to it as dividing the honours attached to the high success of these times with good potting and watering. But I would observe that there is such a thing as predisposition in plants or families of plants to insects, and that one of the most fertile causes of this predisposition may be found in abuse of the root-action through bad soils, bad potting, and bad watering.

I would here beg the earnest attention of all inexperienced plant cultivators to a close consideration of the before-named principles, and suggest to them that the general health of plants is more dependent on the soil, and, in consequence, the root-action, than upon any precise amount of heat, or, indeed, any of those little collateral matters which are, as it were, sub-

sidary to high culture, and recommend that a due attention be paid to the potting-shed and the conservation of soils.—R. E.

HORTICULTURAL EXHIBITIONS.

The following list of Shows, with the dates, may possibly be useful for reference.

- June 17.—York Floral Fête (three days). Royal Botanic Society's Summer Show Regent's Park.
- " 18.—Bawtry.
- " 23.—Royal Horticultural Society (Pelargoniums).
- " 24.—Richmond (Surrey). Leeds (three days).
- " 27.—Canterbury. Brockham (Roses).
- " 28.—Antwerp (cut Roses), (two days).
- " 29.—Maidstone (Roses).
- " 30.—Bagshot (Roses). Colchester.
- July 1.—Royal Botanic Society's Evening Fête. Croydon. Ryde. Farningham Bath. Cardiff. Farnham (chiefly Roses).
- " 2.—Reigate (Roses). Hitchin. Bath. Sunbury.
- " 3.—Tunbridge Wells.
- " 4.—Crystal Palace (Roses). Eltham (Roses).
- " 7.—National Rose Society, South Kensington. Ealing.
- " 8.—Wimbledon. Sutton (Roses). Lee, Blackheath, and Lewisham.
- " 9.—Hereford (Roses). Norwich.
- " 11.—National Rose Society, Manchester. Sidenup.
- " 14.—Royal Horticultural Society (plants and flowers).
- " 15.—New Brighton (Roses). Bedford. Moreton-in-Marsh.
- " 16.—Helensburgh (Roses).
- " 18.—Birkenhead (Roses).
- " 21.—Newcastle, Staffs.
- " 22.—Newcastle-on-Tyne.
- " 25.—Darlington (Roses).
- " 28.—Royal Horticultural Society (Carnations, Begonias, &c.). Buckingham.
- " 29.—Aberdeen.
- August 1.—Liverpool (two days). Southampton (two days).
- " 2.—Antwerp Exhibition of Plants (five days).
- " 3.—Northampton.
- " 11.—Royal Horticultural Society (plants and flowers).
- " 19.—Shrewsbury (two days).
- " 25.—Royal Horticultural Society (Cottagers' show).
- " 27.—Ludlow.
- Sept. 2.—Glasgow.
- " 3.—Abingdon.
- " 4.—Crystal Palace (Fruit and Dahlias), (two days).
- " 8.—Royal Horticultural Society (Dahlias and Grapes).
- " 9.—Edinburgh (two days). Northampton (two days).
- " 27.—Antwerp (fruit and vegetables), (three days).
- Oct. 7.—Crystal Palace (fruit and Potatoes).
- " 18.—Royal Horticultural Society (fruit and vegetables).
- " 27.—Royal Horticultural Society (Chrysanthemums and vegetables).

LATE ANNUALS.

THERE is a common desire among garden owners to have their flowers as early as possible in spring. The greatest attention is given to the early sowing of annuals. Many of them which are perfectly hardy are sown in February or March under glass and grown on; others are sown in the open when both the atmosphere and soil are cold. Much seed never germinates, and the plants which manage to struggle into existence never fully develop their beauties. In my opinion late-flowering annuals are just as acceptable as early ones; in many instances they are more valuable, and in every case they are more beautiful, as they are sown at a time when the seed germinates freely and the plants grow in the greatest luxuriance. Splendid masses of fresh finely flowered annuals will please most people as much in September, October, and November as any which can be grown in May, June, and July, and it is very satisfactory to have a fresh batch of plants just coming into bloom when many of the early ones are failing. Here we wish to have more flowers in October than any time from April until then, and we annually find the late annuals more useful. The spring-sown ones, however, are of no use for autumn blooming. They, as I have pointed out, are never good enough to begin with, and the warm weather of July exhausts them too much to allow them to be of value in autumn. Fresh seed must be sown for the autumn, and this may be put in from the middle of June until the end of July, according to the time each variety takes to come to perfection. The beds in the flower garden are all filled now, and there is no room for seed-sowing, but there are many corners and spare patches about the kitchen garden and shrubberies most suitable. It is these which ought to be filled and made gay.

The seeds of almost every kind of good annual are very cheap, and the sowing is as simple as for Cabbages or Turnips. Drills may be opened 2 inches in depth, the seed sown, and the soil placed back. Shallow poor light soil will never grow them to perfection. The seed will germinate, the plants grow and bloom after a manner, but the display will be of very short duration. Annuals should have manure applied like Cabbage or Potatoes, and the result will be a gorgeous and long display of flowers. I have met many of your readers who have no glass houses in which to rear Pelargoniums and other tender plants, and while they try to do their best with the hardy plants the annuals will be a cheap easily grown and valuable addition to their autumn flowers.

I do not intend giving a special recommendation to any one or two annuals, as all will succeed in autumn, which will grow and bloom in spring or summer, and where space is vacant I would advise that a general sowing be made now, and another in the end of July, the object throughout being to secure a rich late autumn display.—J. MUIR.

LATE CHRYSANTHEMUMS AT MAIDENHEAD.—On visiting the Floral Nurseries, Maidenhead, on the 3rd of June, I was greatly pleased to see a plant of a Japanese Chrysanthemum, Coquette de Castile, with a beautiful well-developed flower, $6\frac{1}{2}$ inches in diameter, on a compact plant in a 48-pot, the

colour being a delicate pink or flesh colour, of good substance. This variety I have no doubt will prove a great acquisition to this now very popular class of autumn flowers; but if we are to have it in flower in the month of June we will be having Chrysanthemums all the year round. These nurseries have only been established little over eight months, and taking into consideration the short space of time since the houses were finished, the results are surprising. The whole of the houses, eight or nine in number, are already filled with fine healthy plants of the best strains of florist flowers. Tuberous Begonias are a specialty, and are being grown in large numbers.—G. S.

LILIES IN POTS.

ABNORMAL GROWTH OF *L. CANDIDUM*.

I HAVE been very successful in the culture of Lilies in pots. I have found the following treatment answer well:—When the stems die down I continue to keep the soil just moist, and when the bulbs have had sufficient time to ripen I repot them in good loam and sand, and plunge



Fig. 124.—Bulb on flower stem of *Lilium candidum*.

them in cocoa-nut fibre, where they remain until they begin to show growth, when I remove them to a greenhouse. When they commence forming surface roots from the stem I place the pots, each containing one bulb, into larger pots, giving good drainage, and fill with loam, broken bones, and a good sprinkling of soot. I have found this treatment far better than shifting the roots into pots a size larger. In repotting Lilies I never take any of the old soil from the ball, but simply remove the surface soil, and when they have been growing freely I feed them well with soot water.

I have a *Lilium auratum* which I have had under the above cultivation for the last five years, and it is still in splendid condition, and has produced during that time three or four dozen bulbs, which I am cultivating.

I send you herewith a very curious specimen of a *Lilium candidum* which flowered splendidly last summer, and which was treated in the same manner as the other Lilies. In February last it began to throw up a stem, and when it had reached about 1 foot in height I noticed the leaves on the stem began to turn yellow. I took the pot down from a shelf to examine it, and found to my surprise that it had produced a bulb on the top of the stem in the place of bloom. You will see I have cut off the greater portion of the withered leaves.—N. MOORE.

BIRMINGHAM BOTANICAL & HORTICULTURAL SOCIETY.

The annual Exhibition of this Society took place on Friday and Saturday, the 12th and 13th inst., at the Botanic Gardens, Birmingham, the

arrangement of the ground and tent being similar to that of the Royal Botanic Society, Regent's Park. Mr. J. E. Wilson's gardener, Mr. W. Jinks, took the first prize for six stove and greenhouse plants, fine well-bloomed specimens; Mr. J. Eaton (gardener, Mr. Lusted), taking the second prize. Two extremely fine lots of nine ornamental plants were staged by Mr. J. E. Wilson, who took the first prize, and in whose collection were grand examples of Crotons Wiesmanni and Andreanum, the second prize falling to Mr. C. E. Mathews (gardener, Mr. Walter Jones), a marvellously fine specimen of *Phormium tenax variegata* being conspicuous. Mr. C. E. Mathews obtained the first prize for three capital Azaleas and the first prize for a grand six herbaceous Calceolarias. A goodly lot of Orchids were staged by the local cultivators, and they attracted much attention. In the class for nine there were five competitors, Mr. Charles Winn (gardener, Mr. H. Rogers) taking the lead with a well-flowered lot, especially *Thurinia Marshallii*, *Dendrobium Dearii*, and *Masdevallia Harryana superba*. Mr. Cooper, gardener to the Right Hon. Joseph Chamberlain, M.P., was second with a good lot, which included *Thunia Bensoni* and *Oncidium macranthum*. An extra prize was awarded to Mr. H. W. Elliott (gardener, Mr. A. Thompson), who also took the first prize for six Orchids, a capital lot of medium-sized plants, which included an excellent *Cattleya Mossiæ* and *Dendrobium Falconerii*. The second prize fell to the Right Hon. Joseph Chamberlain, as well as the first prize for three Orchids, and the second prize to Mr. Elliott. Mr. Cooper was awarded the first prize for single specimen Orchid, a very fine plant of *Lælia purpurata*. Two capital sixes of exotic Ferns were staged, Mr. W. Mathews (gardener, Mr. G. Caldecott) taking the first prize, and the Right Hon. Joseph Chamberlain the second prize.

British Ferns were fairly well represented, the first prize for nine falling to Mr. F. A. Walton, Handsworth (gardener, Mr. F. Denning); the second to Mr. J. Cartland (gardener, Mr. George Robinson). Mr. J. E. Wilson was strong in six Dracenas and six Caladiums, taking first prizes in each, and the Right Hon. Joseph Chamberlain second in each. Mr. W. Hughes, gardener to Mr. F. Osler, took the first prizes, as well as a special recognition of a collection (not for competition) of extremely well-grown Gloxinias.

The Society has a class for nine miscellaneous plants in pots not exceeding 9 inches inside measurement, and four exhibitors staged for the two prizes. Mr. J. E. Wilson's gardener was again to the front with a fine lot, including a well-grown *Dendrobium thyrsoflorum* and *Alocasia Veitchii* in fine character. Pelargoniums, although not yet reaching the high standard of cultivation seen at York and elsewhere, were fairly well represented here. Mrs. Marigold (gardener, Mr. W. H. Dyer), Mr. W. Mathews, and the Right Hon. Joseph Chamberlain being the chief exhibitors. The Society has generally held its exhibition later in the season, and admirably grown Fuchsias have been a great feature. The early fixture of this Exhibition did not enable some of the growers to stage, but the highest praise is due to Mr. Caldecott (gardener to Mr. W. Mathews) for three superbly flowered and well-cultivated specimens. Tuberous Begonias are coming to the front here, and the Right Hon. Joseph Chamberlain led off with his first-prize lot, which included striking plants of *Marchioness of Bute* and *Black Douglas*, two fine single varieties. Mr. W. Mathews was a good second.

In the class for three new and rare plants Mr. F. A. Walton was placed first with *Nepenthes Mastersiana*, *N. sanguinea*, and *Drosera capensis* in good character. For one new new or rare plant in flower—first, Mr. J. E. Wilson with *Cypripedium ciliolare*; second, Right Hon. Joseph Chamberlain with *Epidendrum Wallisii*. For one new and rare plant not in flower—first, Mr. F. A. Walton with *Nepenthes Waltonii*; second, Mr. J. E. Wilson with *Alocasia Thibautiana*. Mr. A. H. Griffiths won first honours with an excellent stand of twelve Tea Roses, and some fine Pansies and Violas were staged.

The fruit part of the Exhibition was weak, but Mr. Cooper's six Royal George Peaches, which took the first prize, were very good.

A special certificate was given to the Right Hon. Joseph Chamberlain for a distinct and high-coloured form of *Odontoglossum vexillarium* named *superbum*, and Mr. Cooper staged in one of his collections a heavily blotched distinct form of *Odontoglossum Alexandræ*. In addition to the Orchids we have indicated, Mr. E. Wright, one of the oldest orchidists about Birmingham, and a prizewinner on this occasion, and Mr. H. W. Elliott also contributed groups of Orchids not for competition.

The local nurserymen were well represented by Mr. Vertegans, who staged a group of fine *Rhododendrons* in flower and an extensive collection of alpine and herbaceous plants, including in excellent character a pan of the *Edelweiss* (*Gnaphalium leontopodium*), also *Gypsophila cerastioides*, and *Dianthus glacialis*. Mr. Hans Neimand (manager, Mr. W. Spink) set up a handsome group of plants arranged for effect, in which *The Bride Gladiolus*, *Tuberose*, *miniature Roses*, and the superb *Caladium Baroness James de Rothschild* were conspicuous. Messrs. Hewitt & Co. contributed a bright group, in which were a goodly number of very fine Tuberous Begonias. We recently gave an illustration and notice of the new range of glass just completed here, and this was filled with a fine lot of Orchids, *Amaryllises*, *Gloxinias*, and other plants in flower, as well as ornamental-foliaged plants. The outside grounds are also in fine order now, and Mr. W. B. Latham is to be congratulated on the good management which is everywhere to be seen. A special Rose Show is to be held in the gardens next month.

THE BAOBAB TREE.

The Baobab or Monkey-Bread, *Adansonia digitata*, has long afforded the most celebrated instances of vegetable longevity; Humboldt indeed calls them "the oldest organic monuments of our planet." They are not uncommon on the western coast of Africa. The tree is remarkable for the small height it attains, compared with the immense diameter of the trunk and length of its branches. Trunks which are 70 or 80 feet in circumference rise to the height of only 10 or 12 feet, when they divide into a great number of extremely large branches, 50 or 60 feet long, which, spreading widely in every direction, form a round verdant mass perhaps 150 feet in diameter, and only 70 feet in height. The roots likewise are of vast length; one of these, laid bare by a torrent which had washed away the earth, was traced to upwards of 110 feet without reaching the extremity. To these peculiarities, rather than to the nature of the wood,

which is light and soft, the great age to which the tree attains may probably be traced. Its form opposes an effectual resistance to the tempests which would overthrow ordinary trees. The history of these Baobabs, possibly of the very trees which Adanson's account has rendered famous, reaches back to the discovery of the coast of Senegal and of the Cape de Verde Islands by Cadamosto in 1455, who in his narrative mentions the singular disproportion between the height and girth of these trees. But they were first fully described by the French naturalist Adanson, who examined them scarcely a century ago. The largest trunks measured by Adanson were 85 feet in circumference, or 27 feet in diameter. Golberry is said to have measured one that was more than 100 feet in girth, and M. Perrottet in 1824 met with many Baobabs in Senegambia varying from 60 to 90 feet in circumference, yet still in a green old age, and showing no signs of decay; but, on the contrary, if wounded in the smallest degree, they exuded a copious sap. There can therefore be no doubt respecting the prodigious size which these trees attain, and there is great reason to suppose that Humboldt was right in supposing them to be the oldest in existence. As to their actual age, the narrative usually given is the following. Adanson observed in 1749, at the Madelaine Islands, near Cape de Verde, some Baobab trees of 30 feet in diameter, upon the trunks of which he found inscriptions that had been made 300 years before by two English travellers; that by cutting through 300 annual layers he discovered the vestiges of these inscriptions upon the wood, thus proving that they were actually made at the date assigned; that by measuring the thickness of these layers he was enabled to judge of the rate of increase during the last three centuries; that having thus obtained the rate of increase in old age, and having by actual inspection of young trunks, learned the rate of growth during the first 100 years, he deduced from these combined data the almost inevitable conclusion that the trees in question were five or six thousand years old. In most accounts of the tree, the following table is also given as if drawn up by Adanson:—

At	1 year old it was	1 to 1½ inch diam., and	5 feet high.
" 20	"	1 foot	" 15 "
" 30	"	2 feet	" 22 "
" 100	"	4	" 29 "
" 1000	"	14	" 58 "
" 2400	"	18	" 64 "
" 5150	"	30	" 73 "

Nothing of this kind, however, was ever published by Adanson. His first account, which comprises all the principal facts, is given in the "Voyage au Sénégal," prefixed to his volume on the natural history of that country, and published soon after his return to France in 1753. Adanson simply relates that on his visit to the Madelaine Islands he found Baobab trees of 5 or 6 feet in diameter, which bore European names and dates deeply engraven on the bark. Two of these he took the trouble to renew, one of which was dated in the fifteenth, the other in the sixteenth century. The characters were about 6 inches in length, and as in breadth they occupied but a small part of the circumference of the trunk, Adanson reasonably inferred that they were not engraven in the early youth of these trees. He had previously seen in the island of Senegal trees of the kind, which were 63 and 65 feet in circumference; but he does not intimate that he inspected the layers of wood in any case. He merely remarks that these inscriptions might furnish some evidence respecting the age which the Baobabs sometimes attained. "For (says he) if we suppose that the inscriptions were engraven even in the early years of these trees, and that they have grown to 6 feet in diameter in the course of two centuries, we may calculate how many centuries they would require to attain the full diameter of 25 feet." Soon afterwards Adanson communicated to the Royal Academy of Sciences at Paris a full account of the Baobab, which was published in their "Memoirs" for the year 1761; and, lastly, he wrote the article "Baobab" for the supplement of the great French "Encyclopædia," published in the year 1776. These accounts, although more detailed, embody no essential additions to what had been already given. He says that the trees in question were two in number, upon the bark of which the names of Europeans were engraven, with dates, some posterior to the year 1600; and others, as far back as 1555, were probably the work of those who occupied Thevet, who in his voyage to Antarctic lands saw some of these trees that same year on a small island close to the Cape de Verde. Some of the dates appeared to be previous to 1500, but these were somewhat equivocal. Neglecting therefore the indistinct dates in the fourteenth century, continues Adanson, and even allowing that the inscriptions were made when the trees were very young, which is highly improbable, as they occupied less than an eighth of the entire circumference, it is evident that if the Baobab has attained 6 feet in diameter between 1555 and 1749—that is, in 200 years, it would require more than eight centuries to attain the diameter of 25 feet, supposing the growth to continue at a uniform rate. But Adanson goes on to say that trees grow the more slowly as they advance in age, so that such an estimate would fall below the truth. As to its rate of growth when young, he states that the tree acquires the diameter of 1 inch or 1½ inch in the first year, the diameter of 1 foot in ten years, and about 1½ in thirty years, which certainly agree pretty well with the table I have just spoken of; but so far from having extended these data, and employed them in the manner which is attributed to him, he says that although it might be desirable thus to employ them, a good knowledge of geometry teaches that they are quite insufficient for that purpose. Hence, instead of attempting any precise determination, he merely offers the probable conjecture that these largest Baobabs may have been in existence for several thousand years, or nearly from the period of the universal deluge. The table has been so often published in the encyclopædias in this country, as well as in foreign works of great authority, that

I have considered it necessary to point out to you at some length the uncertainty regarding its authenticity. I believe it was actually drawn up by Duchesne, a French writer on forest trees, since the commencement of the present century, his only data being the observations of Adanson on trees up to the age of thirty years, and his supposition that the largest ones might have been coëval with the deluge—from these the intermediate years were intercalated.

But as already said, whatever doubts may be entertained as to their actual age, there is a strong presumption in favour of their being the most ancient living monuments in the world. On the western coast of Africa this tree is very liable to be attacked by fungi, which prey upon its heart-wood, and without changing its colour or general appearance, destroy the life of the plant, and render its timber very soft. Trees thus destroyed are hollowed out as mausolea or burial-places, to receive the dead bodies of physicians and magicians, and such other persons who, from their skill, are presumed by the superstitious natives to hold communion with evil spirits, and are therefore denied the common rites of sepulture. The bodies suspended in these chambers become dry and are well-preserved, like mummies, and are called in the language of the country Guiriots.—(Forestry.)

SAXIFRAGA MACNABIANA.

AGAIN and again has it been urged upon those who give attention to hybridising in any of its forms that a correct account of the cross be published in some journal, or failing that, recorded in a private memorandum ready when required. Not so very long ago considerable trouble was given to botanists by the appearance of a new Saxifrage under the name of *S. Wallacei*. The parents, as far as I can remember, were given along with other detailed and necessary information, and for want of better knowledge it was named as above by a very competent authority. The plant on examination, however, turned out to be Bossier's *S. Camposii*, a species collected by him in Spain, and which answered in every detail to the new form introduced as *S. Wallacei*. It is rather puzzling to know how the confusion came about; Mr. Wallace, of the Dean Cemetery, being confident of the cross, and of course the dried specimens of over half a century ago answered for Bossier. The plant is perfectly distinct from all other Saxifragas, coming nearest in general characters to *S. Maweana*, a species found in Morocco by Mr. Maw of Broseley, but on close examination specific characters are easily distinguished. The conclusions to be drawn from the above appear to be that the plant as found by Bossier is a natural hybrid, which is most unlikely, for speculations are extremely vague as to what are the parents, or the seeds or seedlings have in some mysterious way got into the seed pot at the Dean, and so even deceived such an observer as Mr. Wallace.

At present again the plant above mentioned, *S. Macnabiana*, is being located and its parents guessed at, not at all after the fashion recommended by science. Mr. Lindsay, Curator of the Edinburgh Botanic Gardens, who ought to know more about it than anyone else, states that it is supposed to have been raised by the late Mr. MacNab from a cross between *S. Cotyledon* and another species. It is hard to doubt the authority of such able plantmen, but facts speak for themselves, and we must take things as we find them. *S. Cotyledon* is well known in gardens with its neat rosettes of almost spatulate leaves, broad, and regularly, and sharply serrated, the dense or numerous flower spikes invariably pure white, and with the petals narrowing to base or else of one breadth from the base to the point, few or no hairs, and entirely devoid of glands. The other parent suggested by Mr. Lindsay is *S. lingulata*, which has narrow crusted leaves, narrow but distinctly dilated at the base, especially in the rosettes, and said by Engler to be rarely clothed with hairs, and then they are sparse with few or no glands, and petals white, shaped much as in *Cotyledon*. *S. Macnabiana*, has long narrow leaves, hardly any difference in breadth from base to tip, the petals of the flowers blotched or spotted and quite obovate in shape, and the flower stalk densely covered with long glandular hairs. How it takes after either of the above described I am quite at a loss to see, and it appears to me after watching the Saxifragas side by side for a considerable time that *S. Macnabiana* is nothing more than a glorified *S. Hostii* (syn. *S. elatior*), and may not unlikely be a seedling sport from that plant. The leaves are exactly alike in shape, texture, and crustation; the habit is quite the same as in *S. Hostii*, the thickly scattered glandular hairs, the obovate petals—in fact, *S. Hostii* is an exact fac-simile of *S. Macnabiana*, with the exception of the larger not more numerous spots or blotches. As will be seen from the above I claim nothing more for *S. Macnabiana* than a place as an improved garden form of *S. Hostii*. And why not? Saxifragas have long been in cultivation, and there is no reason why Saxifragas should not improve themselves as well as Pœonies, Daffodils, Aquilegias, and many other popular flowers; indeed, I have seen far more variations in the common "None-so-Pretty" than can be traced between some of the forms of *S. Hostii* I have growing side by side with *S. Macnabiana*.—M. S.

ROYAL BOTANIC SOCIETY.

JUNE 17TH.

THE second Summer Show of this Society is always one of the principal horticultural events of the year, and no other exhibition attracts so many distinguished visitors. A most liberal schedule of prizes is provided, and the period at which it is held is well suited for obtaining an extensive and representative display of plants, flowers, and early fruits. The large marquee, too, is admirably adapted for effective arrangement of the exhibits, and

Mr. Comber invariably takes full advantage of this, with the result that the Botanic Society's Shows are unanimously admitted to be the most beautiful in or out of London. On Wednesday, not only was the marquee filled with the plants in competition and the handsome trade groups, but the corridor and a long tent leading from the central one contained numbers of contributions, the cut flowers and fruits occupying considerable space.

The weather was not quite so fine as might have been desired, but though dull and threatening in the morning there was little rain, and an excellent company of visitors assembled.

STOVE AND GREENHOUSE PLANTS.—There was an excellent display of specimens in these classes, and though the Azaleas which render earlier shows so attractive were absent, Heaths, Genethyllis, Statices, and miscellaneous hardwooded stove and greenhouse plants were in capital condition, some admirable examples being staged. The two leading exhibitors in the nurserymen's and amateurs' classes were the redoubtable Mr. J. Cypher and Mr. Donald. The Cheltenham plants have figured conspicuously at many exhibitions this season, but do not appear to have suffered in the least by their peregrinations. The magnificent *Erica Cavendishiana*, which has been frequently praised, still appears in grand condition. Mr. Donald's beautiful plants have been fully described in the reports of the Waltham Abbey, and this week in the report of the South Essex Show at Leyton, and it need only be added respecting them that they looked equally well in the marquee at Regent's Park.

Twelve plants (open).—First Mr. J. Cypher, Cheltenham; second Mr. H. James, Castle Nursery, Norwood; third Mr. J. F. Mould, Pewsey, Wilts. Six plants (amateurs).—First Mr. D. Donald, gardener to J. G. Barclay, Esq., Knotts Green, Leyton; second Mr. C. Rann, Handcross Park Gardens; third Mr. J. Young, gardener to O. E. Coope, Esq., Rochetts, Brentwood. Six plants (nurserymen).—First Mr. J. Cypher; second Mr. E. Tudgey, Waltham Cross; third Mr. H. James.

ORCHIDS.—Two handsome banks of Orchids were formed by the entries in the classes for these plants, and the display both in extent and beauty of the individual specimens was one of the finest provided at Regent's Park for a considerable time. Mr. Douglas had some especially fine plants, and his dozen well merited the premier prize awarded to them. A central specimen of *Odontoglossum vexillarium* was grand in the extreme, bearing nearly 200 blooms on thirty-four spikes, some being four to a pseudo-bulb. The variety was also a good one, and the plant was in excellent health. Other notable plants in Mr. Douglas' collection were *Lælia purpurata alba*, *Epidendrum vitellinum majus*, *Cypripedium spectabile*, *C. Lawrenceanum*, *Masdevallia Harryana*, and *Odontoglossum Roezli*, and *Roezli album*. Mr. Salter's specimens were in a most creditable healthy condition, *Brassia verrucosa*, with seven spikes; *Epidendrum vitellinum majus*, seventeen spikes; *Aerides Fieldingi*, with four large panicles; and *Odontoglossum vexillarium*, with ten spikes, six flowers each, a very pretty variety. Mr. Cypher's huge *Dendrobium thyrsoiflorum*, with about three dozen spikes, and *Cypripedium Lawrenceanum* with over forty large flowers, was equally handsome. The best of Mr. James' plants were four profusely flowered *Cattleys* and a fine *Lælia purpurata*.

The single specimen classes brought a number of healthy well-grown specimens, but not of extraordinary size. Messrs. Jackson showed a good collection, one of his best plants being *Aerides Lindleyana*, with one large panicle, the flowers of great size, the lip rich crimson. *Aerides Dayanum* was also handsome with two spikes. Mr. Cypher had a large plant of *Oncidium sphacelatum*, with seven panicles 3 or 4 feet long; and Mr. James had a good example of the richly coloured *Cattleya Warneri*. Mr. Douglas's single specimen group, *Odontoglossum vexillarium*, represented by three fine plants, was especially handsome. *Dendrobium suavisimum* and *Odontoglossum Roezli* were also noteworthy. Mr. Cooke had two large plants of *Vanda suavis*, bearing three spikes each, and *Cattleya Warneri* with seven large richly coloured flowers. One of the best of Mr. Salter's specimens was *Anguloa uniflora* with ivory-like pink-dotted flowers.

Twelve Orchids (amateurs).—First, Mr. J. Douglas, gardener to F. Whitbourn, Esq., Great Gearies, Ilford; second, Mr. C. J. Salter, Selborne Gardens, Streatham; third, Mr. F. J. Hill. Twelve Orchids (nurserymen).—First, Mr. J. Cypher; second, Mr. H. James; third, Messrs. T. Jackson and Son, Kingston. Twelve Orchids, one plant as a pot (amateurs).—First, Mr. J. Douglas; second, Mr. S. Cooke, gardener to Dr. B. Crawshaw, Esq., Sevenoaks; third, Mr. C. J. Salter. Twelve Orchids, ditto (nurserymen).—First, Messrs. T. Jackson & Son; second, Mr. J. Cypher; third, Mr. H. James.

PELARGONIUMS.—The Slough Pelargoniums were much in advance of the other exhibits, the plants being in excellent condition, compact, and profusely flowered. The show varieties were Prince of Russia, Despot, Amethyst, Ritualist, Comtesse de Choiseul, and Joe. The fancy varieties were Mrs. Pottle, Sarah Bernhardt, Mrs. Pope, Lady Carrington, Princess Teck, and Miss E. Little. Several of Mr. Wiggins' and Mr. Hill's fancy varieties were also good, but the collections were not so even.

Six plants, in 8-inch pots (nurserymen).—First Mr. C. Turner, Slough. Six plants, ditto (amateurs).—First Mr. J. Hill; second Mr. J. Wiggins; third Mr. D. Phillips. Six fancy varieties (nurserymen).—First Mr. C. Turner; third Mr. W. Griffin, Sydenham. Six fancy varieties (amateurs).—First Mr. Wiggins, gardener to W. Clay, Esq., Grove Road, Kingston; second Mr. D. Phillips, gardener to R. W. Mann, Esq., Langley Broom, Slough; third Mr. J. Hill, gardener to H. Little, Esq., Hillingdon. Six zonal varieties (open).—First Mr. Weston, gardener to D. Martineau, Esq., Clapham Park; second Mr. H. Eason, Highgate; third Mr. H. Rowson, Highgate.

FINE-FOLIAGE PLANTS.—The Handcross specimens were very fine and in excellent health, *Cycas revoluta*, *Areca sapida*, *Croton interruptus*, and *Bonaparteia stricta* being of remarkable merit and the finest of their kind in the show. Mr. Cypher's plants were also large healthy specimens, a specimen of *Croton Johannis* in the front of the group being noteworthy for its bright colour. Mr. Rann's *Crotons* were magnificent both in size and colour, and rarely are such beautiful examples seen. The varieties were *angustifolius*, *albicans*, *Williamsi*, *Everestianus*, *Prince of Wales*, and *Warreni*. They were from 2 to 7 feet high, and of proportionate diameter.

For twelve foliage plants suitable for a dwelling room lighted by gas, Messrs. Hooper & Co. were first, showing *Phœnix rupicola*, *Ophiopogon*

Jaburan folia aurea, *Aspidistra lurida variegata*, and *Kentia Belmoreana*, very neat and compact. Mr. R. Butler was second, having chiefly *Dracænas* and small Palms.

Six fine-foliage plants (amateurs).—First Mr. C. Rann, Handcross Gardens; second Mr. Young; third Mr. R. Butler, St. Dunstan's Lodge, Regent's Park. Six fine-foliage plants (nurserymen).—First Mr. J. Cypher; second Mr. E. Tudgey; third Mr. H. James. Six Palms (open).—First Mr. R. Butler; second Messrs. Hooper & Co.; third Mr. H. James. Six *Crotons* (open).—First Mr. C. Rann; second Messrs. Hooper & Co., Covent Garden; third Mr. R. Butler. Six variegated plants, not *Crotons*.—First Mr. H. James; second Messrs. Hooper & Co.; third Mr. Butler. Six Exotic Ferns (amateurs).—First Mr. Rann; second Mr. J. Douglas; third Mr. H. Eason.

NEPENTHES AND SARRACENIAS.—Only two collections of these were staged, and there was only one entry in the class for *Sarracénias*. Mr. James had well-pitched plants of *N. Rafflesiana*, *N. intermedia*, *N. ampullacea vittata*, *N. sanguinea*, *N. robusta*, and *N. Hookeriana*. Mr. James also had the first prize for *Sarracénias*, showing *flava maxima*, *Mitchelliana TOLLIANA*, *Courti*, *Stevensi*, and *purpurea*. Messrs. Laing's *Nepenthes* comprised some well-grown plants, especially notable, being the highly coloured variety of *N. Mastersiana*. Twelve *Nepenthes* (open).—First Mr. H. James; second Messrs. J. Laing & Co, Forest Hill.

TUBEROUS BEGONIAS.—A dozen plants of distinct well selected varieties gained Messrs. J. Laing & Co., Forest Hill, the first prize in that class. Those shown were as follows, all the flowers being distinguished by their size, substance, and excellent form—*Bridesmaid*, white; *Novelty*, bright red; *White Perfection*, white; *Her Majesty*, white edged with pink; *Madame Stella*, pink; *General Roberts*, brilliant scarlet; and several unnamed seedlings of great merit.

FRUIT.

Only one collection of fruit was staged for the fruiterers' prize, Mr. Robins, gardener to E. Dyke Lee, Esq., Hartwell House, Aylesbury, gaining the first prize with twenty dishes of good fruits. The Grapes were *Black Prince*, well coloured; *Black Hamburg*, fairly good; *Buckland Sweetwater*, rather green; and *Foster's Seedling*, good. The Melons were *Hero of Bath*, *Hero of Lockinge*, *Scarlet Invincible*, *Victory of Bath*, and *Lord Beaconsfield*. A fine dish of *Alexandra Peaches* was staged, the others, *Royal George* and *Early Victoria*, with *Nectarines* *Violette Hative* and *Lord Napier* being rather small. *President Strawberries* and *Figs* were the other dishes in this collection.

GRAPES.—For so early in the season the Grapes were fairly good, well coloured, and of good size, except in a few instances. Mr. Bates, gardener to Mrs. Meek, Poulett Lodge, Iwickenham, had the best basket of *Black Hamburgs*, fine in berries and excellently coloured; he was followed by Mr. M. K. Dixon, gardener to Sir T. M. Wilson, Searles, Uckfield, smaller and deficient in colour; and third Mr. H. Cakebread, gardener to Sir P. F. Rose, Rayners, Bucks, the berries of great size, but not sufficiently coloured, all being of the same variety.

Five baskets of *White Grapes* were staged, Mr. P. Feist, gardener to R. J. Ashton, Esq., Bishopsgate House, Staines, taking the lead with *Muscat of Alexandria*, clean, even, and colouring well; Mr. W. Mowbray, gardener to the Earl of Leven and Melville, Fulmer, Slough, followed with *Buckland Sweetwater* with handsome berries and well ripened; Mr. W. Bates being third with the same variety smaller in berry.

Three competitors exhibited in the class for three bunches of *Black Hamburgs*, Mr. A. Smith, gardener to W. H. Sewell, Esq., Warren Hill, Longhton, securing the premier award for large handsome bunches, beautifully coloured, berries of medium size. Mr. Aslett, gardener to C. Butler, Esq., Warren House, Hatfield, was second, and Mr. C. Blurton, gardener to Sir J. Hartopp, Bart., Kingswood Warren, Epsom, was third, each with smaller bunches than the first; the last named was, however, very well coloured.

For three bunches of any other black variety Mr. Mowbray was first with *Black Prince*, large bunches fairly well coloured, and Mr. Cakebread was second with *Madresfield Court*, large in berry, but deficient in colour.

White Grapes were also provided for in two classes. For three bunches of *Muscat of Alexandria* Mr. Cakebread was first with large even bunches and berries, and Mr. Feist second, but neither were so well coloured as might be desired. Mr. Cakebread was first in the other variety class with *Foster's Seedling*, followed by Mr. Mowbray with *Buckland Sweetwater*, and Mr. Robins with *Foster's Seedling*.

MELONS.—Four competitors entered the class for two Melons, Mr. J. Douglas was first with *Scarlet Premier* and *Hero of Lockinge*. Mr. H. W. Ward, gardener to the Earl of Radnor, Longford Castle, Salisbury, was second with *Read's Scarlet Flesh* and *Hero of Lockinge*, beautifully netted, and Mr. G. Halliday, gardener to J. Norris, Esq., Castle Hill, Bletchingley, was third with *Highcross Hybrid* and *Scarlet Gem*.

PEACHES AND NECTARINES.—With two dishes of *Peaches* Mr. Mowbray took the lead, showing *Royal George* and *Noblesse*, the former good and well coloured. Mr. Robins was second, showing *Early Louise* and *Alexandria*, the latter fine. Mr. C. Blurton was third with *Violette Hative* and *Royal Royal George*, small, and wanting colour. Mr. Mowbray was first with *Elruge* and *Pitmaston Orange Nectarines*, Mr. Robins being second with *Lord Napier* and *Newington*, all rather small.

Mr. T. Laxton, Bedford, sent samples of his *Strawberries*, *The Captain* and *Noble*, grown in the open air. The last-named is a fine conical fruit of a rich colour, very handsome. Messrs. Paul & Son, Cheshunt, exhibited plants of *Strawberry Pauline*, bearing ripe fruits grown out of doors.

CUT FLOWERS.—*Roses* produced a beautiful display, the blooms generally being extremely fresh and of good substance. The principal prizetakers were Mr. H. Gibson, gardener to T. F. Burnaby Atkins, Esq., Halstead Place, Sevenoaks; T. W. Girdleston, Esq., Sunningdale; Mr. J. Hollingworth, Turkey Court, Maidstone; Messrs. Paul & Son, Mr. B. R. Cant, Mr. C. Turner, Mr. Robins, and Mr. Rumsey.

Of other cut flowers there was also an excellent show. With *Orchids* Messrs. Salter, Hill, and Douglas secured the chief prizes. For hardy flowers

Mr. T. S. Ware, Tottenham; Messrs. Paul & Son, Cheshunt; and Messrs. Kelway & Son, Langport, were the premier exhibitors, and staged some magnificent collections, which attracted as much admiration as any exhibit. With miscellaneous flowers there was also a good competition.

MISCELLANEOUS.—Messrs. Paul & Son, Cheshunt, showed a grand group of hardy plants. One of the most effective and interesting groups in the Show (small silver medal). Messrs. E. G. Henderson & Son, Pine Apple Nursery, contributed a beautiful group of foliage plants, with Orchids and Blandfordias, and margined with Adiantums and Caladium argyrites (large silver medal). Messrs. Laing & Co., Forest Hill, had a most brilliant display of Tuberosus Begonias, and arranged with Caladiums and other foliage plants, and comprising many novelties (large silver medal). Messrs. J. Veitch & Son, Chelsea, had a choice collection of new plants, many of which were certificated. Mr. H. James showed a group of Dracaenas, comprising a number of distinct varieties (large bronze medal). Messrs. Hugh Low & Co., Covent Garden, had a small group of Orchids (bronze medal). Mr. B. S. Williams, Upper Holloway, showed an extensive and handsome group of new and rare plants and Orchids, most tastefully arranged (large silver medal). Mr. C. J. Salter had a group of exceedingly well-grown Hydrangeas, the heads very large. Messrs. Barr & Son, Covent Garden, had a large group of Irises and hardy flowers (small silver medal). Messrs. Kelway & Son, Langport, Somerset, had some remarkably fine Pœonies and Pyrethrums (small silver medal).

Messrs. H. Cannell & Sons, Swanley, had an interesting group of Begonias, Verbenas, &c., a number of plants of a bright double scarlet Tuberosus Begonia, of dwarf compact habit, named Louis Bouchet, being very notable. Flowers of the double pink Tuberosus Begonia, named Rosamonde, were very handsome, as were also flowers of seedling single varieties. The Verbenas included a fine selection of varieties. Two stands of excellent Pelargonium flowers were also shown. Baskets of *Lychnis Viscaria splendens flore pleno*, with bright rosy crimson flowers, very full and exceedingly abundant, from Mr. T. S. Ware, Tottenham, attracted much admiration. Mr. J. Vander Rees, Tooting, showed a large collection of Iris and Pyrethrum blooms, most varied in colours. Messrs. Hooper and Co., Covent Garden, had an extensive and handsome collection of hardy flowers, Pœonies, Irises, Pyrethrums, and innumerable other choice plants (small silver medal).



HARDY FRUIT GARDEN.

STRAWBERRIES.—With an abundant crop of fruit swelling fast, sewage may be poured upon the soil between the plants till the fruit is almost full grown, when, and before the colouring, let the use of sewage cease, and the soil be thickly covered with any coarse grass or rushes available for the purpose. We give preference to such a surface dressing, as it serves both to keep the fruit clean and the soil moist.

PEARS.—Pressure of work may have prevented the pinching of lateral growth till it has to be done with a knife. Do not delay doing this any longer, for midsummer growth will now be starting, and an early start is important in order that wood-growth and fruit buds may be well matured by autumn. Let thinning of fruit have especial attention, so that we may have a full crop of really fine fruit. Much fruit is falling off, but thinning by hand is still necessary, especially for those sorts which bear the fruit in clusters. We have an entry in our fruit book of some of the Pears having a full crop of fruit this year, which we copy here, and we hope to give a supplementary list when we have looked over the whole of our trees:—

- Winter Nelis
- Marie Louise
- Glou Morceau
- Duchesse d'Angoulême
- Beurré de l'Assomption
- Easter Beurré
- General Todtleben
- Beurré Clairgeau
- Beurré Superfin
- Passe Colmar
- Maréchal de Cour
- Thompson's
- Jeanne de Witte
- Urbaniste
- Nouvelle Fulvie
- Knight's Monarch
- Baronne de Mello
- Fondante de Charneu
- Besi Vaet
- Deux Sœurs
- Beurré d'Anjou
- Marie Louise d'Uccle
- Bergamotte Esperen
- Durondeau
- Citron des Carmes
- Colmar d'Été
- Louise Bonne of Jersey
- Emile d'Heyst
- Huyshe's Victoria

- President Métivier
- Olivier de Serres
- Van Mons Léon le Clerc
- Williams' Bon Chrétien
- Beurré Giffard
- Beurré Diel
- Fondante d'Automne
- Beurré d'Amanlis
- Broom Park
- Doyenné du Comice
- Beurré Sterckmans
- Alexandre Bivort
- Red Doyenné
- Beurré Duhaume
- Duchesse d'Orleans
- Jargonelle
- Comte de Lamy
- Millot de Nancy
- Triomphe de Jodoigne
- Beurré Hardy
- Soldat Esperen
- Josephine de Malines
- Doyenné Boussoch
- Doyenné d'Été
- Madame Treyve
- Jalousie de Fontenay
- Jersey Gratioli
- Gansel's Bergamot
- Alexandre Lambre

- Dr. Trousseau
- Dana's Hovey
- Flemish Beauty
- Pitmaston Duchess
- Forelle

- Beurré Bachelier
- Beurré d'Aremberg
- Autumn Nelis
- Brockworth Park

PLUMS.—Of these we have a very heavy crop of Prince of Wales, and good crop of Coe's Golden Drop, Victoria, Orleans, Mitchelson's, Pond's Seedling, Denniston's Superb, Magnum Bonum, Denbigh, Woolston Black.

FRUIT FORCING.

MELONS.—Where the supply of these much-sought-after cooling summer fruits is likely to run short by the ordinary means at command the supply can be augmented by planting Melons in frames just cleared of bedding and other plants, and presuming that plants have been raised as advised in a former calendar they will now be ready for planting out. The frames may be placed on a border with a south aspect, and preferably on a bed of dung and leaves, so as to generate a gentle warmth, as this insures the speedy establishment of the plants, placing in each light a barrowload of loam three parts and road scrapings one part. If the loam be stiff an addition of a little old mortar rubbish and charcoal will be an advantage, the whole being well incorporated and put together firmly in the centre of each light in the shape of a rounded cone about 9 or 10 inches deep in the centre, and from that sloping outwards. The soil ought to be moderately moist and the plants placed out without farther delay. The soil should be pressed firmly around each plant, and a gentle watering given if the soil be no more than moist; if wet it will not be necessary, especially if the ball of soil be, as it ought, thoroughly moist. More soil must be added to the sides of the hillocks as the roots protrude; but there will not need a much greater addition of soil than that given in the first instance; but what is given must be made firm, as the Melon thrives best in a firm but not very stiff soil. After planting shade for a few hours in the middle of the day when the sun is powerful until they become established, after which they cannot have too much light or sun. The plants will not need a large quantity of water, but a sprinkling of the surface of the bed at closing time will maintain a genial growing atmosphere, and a gentle syringing of the plants may be practised on bright afternoons, but it must be done sufficiently early to allow the foliage to become fairly dry before night. A little ventilation will be needed from seven to eight o'clock in the morning, according to the weather, or at from 70° to 75°, and increased about nine o'clock or later, the temperature being kept through the day at 80° to 85° from sun heat, and under ordinary circumstances the frames may be closed at from half-past three to four o'clock in the afternoon, and about six o'clock a little ventilation may be given, so as to allow the pent-up moisture to escape, and may remain on all night if warm. The time, however, of ventilation will need to be regulated by the weather. When the plants are in free growth make a selection of the growths and train two to the back and other two to the front, rubbing off all others, and stop those retained when a foot from the sides of the frame. The laterals will show fruit at the second joint, when syringing the plants and surface of the bed must cease, and a little air be admitted day and night. When the blossoms are fully expanded impregnation must be practised daily in the middle of the day, stopping the laterals at the same time one joint beyond the fruit, and when four fruits to a plant are secured the damping as before may be again resorted to.

In houses, &c., the usual routine will need to be persisted in as regards stopping, thinning, tying, and regulating the growths. Structures in which the fruit is ripening or approaching thereto should be freely ventilated, and a dry and moderately warm atmosphere maintained, withholding water from the roots, but not to the extent of causing the foliage to flag, and the fruit should be well exposed to light. In houses where the fruits have set and are swelling syringe freely twice a day during favourable weather to encourage the fruit to swell and to keep down red spider. Should green or black aphides appear fumigate moderately on two or three consecutive calm evenings, or dust with tobacco powder in the evening, and syringe well the following morning.

CUCUMBERS.—Thinning the shoots and encouraging fresh in place of old and exhausted growths are essential to a maintenance of a succession of fruit. Equally important is the removal of all decayed portions of wood, bad foliage, and superfluous and deformed fruits. Be careful to avoid overcropping, as a glut of fruit is almost certain to be followed by corresponding scarcity through the enfeeblement of the plants. So far as circumstances allow maintain a steady bottom heat and an equable temperature, as any check to growth is certain to result in unsightly fruit, and that is not the worst, as they are mostly tough and badly flavoured. Surface-dress the beds occasionally with rather lumpy material—turfy loam with a fourth of well-decayed manure free from worms being most suitable—and give liberal and frequent supplies of liquid manure to plants in full bearing, syringing freely twice a day in bright weather. Ventilate a little in the early part of the day, increasing it with the solar heat, keeping it through the day, however, at 80° to 85° or 90°, and close early in the afternoon with plenty of atmospheric moisture. Keep a sharp look-out for insect pests, and destroy them before they become established upon the plants. If mildew appear dust thoroughly with flowers of sulphur, maintaining a somewhat drier and more freely ventilated atmosphere, and for canker rub quicklime into the affected parts.

PLANT HOUSES.

Calanthes.—The majority of these plants are in full beauty during November and December when autumn flowers are plentiful. A batch to

commence flowering at Christmas and continue through January will be the most serviceable where a good and continuous supply of flowers is required. To attain this end the pseudo-bulbs must be started at once, by placing them upon damp moss in boxes in any structure where the temperature ranges from 60° to 65° at night until they have started into growth, when they may be potted and grown with the earlier batches in brisk moist heat shaded from the sun. Some of the most forward plants if started in small pots will have made a fair per-centage of roots, and may be transferred into the size in which they are intended to flower. This operation must be done carefully and without the slightest injury to the roots. The pots should be liberally drained and plenty of room left at the top for water. The soil must be pressed firmly into the pots, and should consist of fibry loam and peat in equal proportions, one-seventh of cow manure passed through a fine sieve, and a liberal dash of coarse sand. Supply water carefully until the roots are active in the new compost, when abundance must be given them.

Cyclamens.—Young plants that were wintered in small pots and transferred during the early months of the year into 3 and 4-inch sizes may now be placed into 5 and 6-inch pots. If a suitable low house cannot be given them they may be placed in coll frames well elevated to the glass to insure a sturdy growth of the foliage. Keep the frame close until the plants are rooting into the new compost, when abundance of air must be admitted. Later batches placed into 2-inch pots during February will now be well-rooted, sturdy little plants, and ready for larger pots. These should be given as small a shift as possible, so that they can afterwards be transferred into 5-inch pots, in which they will make fine plants before winter. Keep these in a warm temperature until they are well established, when they may be placed in a cold frame. Plants raised from seed sown early in the year and afterwards placed in pans, should now be placed in small pots without delay. These must be grown on for a time in a temperature ranging from 60° to 70°, and the stronger will make admirable plants before the end of the season, while the weaker may be kept in small pots during the winter and repotted early for another year. The sun must be shaded from these plants, at the same time every ray of light possible must be admitted, or the foliage will soon be drawn up weakly. Ventilate on all favourable occasions, and freely syringe the plants twice daily. These plants do well in fibry loam three parts, the other part being composed of leaf soil, cow manure, and sand. During the early stages of the plants a greater per-centage of leaf soil may be employed.

Tuberous Begonias.—The earliest plants raised from seed and pricked into pans will now be sturdy examples with six or seven leaves each, and should be placed singly in 4-inch pots if required to flower for decorative purposes. These plants if grown in heat should be gradually hardened previous to potting, and then grown in cold frames. Growth is not rapid under cool treatment, but the plants are dwarf, and the flowers produced much finer than when forced in heat. When the plants have been grown in heat it is a good plan to make up a slight hotbed in a cold frame, and stand them upon it as they are potted. Under these conditions the plants soon root into the new soil, and are gradually hardened without the risk of being checked. These plants must be shaded from bright sunshine.

Celosias.—These are amongst the best autumn and winter flowering plants that can be grown, for they last in good condition from three to four months if kept in any structure free from damp. Seed should be sown in pans at once in an intermediate temperature, and as soon as the seedlings are large enough they should be pricked off singly into thumb pots and grown in cold frames. When in small pots to commence with one shift only is required afterwards, 5-inch pots being very suitable to flower them in.

Calceolarias.—Where these are required for decoration as early in the season as possible sow seed at once. A shallow pan may be filled with light sandy soil made fine and even on the surface, upon which the seed can be sown, and then carefully water it with a fine-rose can. Do not cover the seed with soil. After watering place a square of glass over the pan and cover with moss until the seed germinates. Place the pan in a cold shady frame, remove the moss as soon as the seedlings appear, and gradually admit more light and air.

Fuchsias.—The earliest plants started and pinched are now in full flower. They should be gradually hardened to cool treatment ready for the conservatory or any other structure kept gay with flowering plants. The plants should enjoy abundance of light, but be shaded from bright sunshine. Abundance of water will now be required at their roots, and occasionally stimulants in a weak state, soot water being very good for these plants. Young plants in 6-inch pots may be pushed forward and allowed to come into flower if wanted; if not, pinch them again and give them a dressing of artificial manure on the surface of the soil. Spring-struck plants may be placed into 5 and 6-inch pots, a very suitable size for decorative purposes. Another batch of cuttings may be rooted, and if grown well will be found very useful in a small state.

THE FLOWER GARDEN AND PLEASURE GROUND.

Flower Beds.—The rains, which appear to have been general, fell most opportunely for the bedding plants already put out, and improved the working of the ground in other cases. No time should be lost in completing the work of planting, all spare plants being put into the mixed borders directly the principal beds and borders are finished. If these surplus plants are left standing about till the middle of July in pots, pans, and boxes they present a poor appearance, and seldom make much progress when planted so late. Pelargoniums of sorts when once they are established in fairly good soil rarely require any farther waterings, and a mulching of leaf soil, fine peat, cocoa-nut fibre refuse, and even fine grass from the mowing machine, will do much more good to Verbenas, Violas,

Calceolarias, Lobelias, Fuchsias, Dahlias, and other moisture-loving plants than repeated waterings. The latter serve to impoverish the soil, and unless frequently repeated it should not be commenced, or rather continued, after the plants are fairly established. Before the mulching is applied the surface of the ground should be carefully stirred with a Dutch hoe and levelled if need be with a rake, and if it is done soon after a soaking rain so much the better. Any plants put out late and moved with but little soil about the roots may well be shaded from bright sunshine till they have recovered somewhat, and for this purpose strong branches of trees and evergreens are available. Dahlias, Asters, Stocks, Zinnias, and Marigolds required extra fine for exhibition or other purposes ought to have well-enriched soil to root in, be mulched with short manure, and given occasional supplies of liquid manure, especially during showery weather. Unless they make a strong and early start the blooms rarely attain a large size.

Carpet Beds.—These are generally the last to be completed, the principal portion of the highly coloured fine-foliaged plants being the most delicate. In many places the hardiest portion of the plants employed are put out early, as it is found that the Sedums and other groundwork kinds soon spread in dull showery weather. It is a mistake to plant large patches of Sedums, Herniaria, Veronica, Mentha, and Antennaria, as when separated into small pieces and dibbled in neatly and firmly they soon spread and present a better appearance than if disposed in heaps. All are well adapted for filling in the groundwork of the designs, the figures being filled with Alternantheras, Iresine Lindeni, Golden Pyrethrum, Kleinias, Echeverias metallica and metallica glauca, Sempervivums, Golden Variegated Arabis, Ajuga reptans rubra, dwarf Lobelias, and dwarf Ageratums. To be effective the beds ought to be closely and neatly planted, as but few of the delicate sorts make much growth.

Subtropical Plants.—These may also be safely put out in all localities. Masses of such kinds as Cannas, Ricinuses, Solanums, and Wigandias, with bright and suitable edgings are very effective, and a judicious mixture of fine-foliaged and flowering plants also finds many admirers. Strong old plants of Cordylines, Palms in variety, Dracænas, Yuccas, Musas, Pandanuscs, Abutilons, among fine-foliaged kinds, and such flowering plants as Plumbago capensis, Erythrinas, tuberous-rooted Begonias, Fuchsias, Marguerites, Salvias, herbaceous Lobelias, Gaillardias, &c. can frequently be well spared from the houses, and it is not yet too late to plant them effectively in mixture, either in a large bed or border. Plenty of leaf soil or common peat should be mixed with the soil, especially if it is at all close and poor.

Roses.—These are breaking strongly, the growth being unusually clean and floriferous, and we may safely anticipate a good if rather late display. Where the pruning was properly done, as advised, there will be more growths than should be allowed to remain, and this both in the case of dwarfs as well as standards. All the sturdiest and best placed shoots ought to be reserved, only the very gross and the weakest, where at all crowded, being cleanly removed. This will have the effect of strengthening the preserved shoots, improving the display this season, as well as insuring a more thorough ripening of the wood. If extra fine blooms are wished for only the strong central buds should be allowed to develop all the side buds being at once removed. A sharp look-out must be kept for maggots, as these soon ruin a number of buds. Hand-picking is the best remedy for these, and diluted tobacco water, or a decoction of quassia and softsoap, will keep down green fly. Roses ought to be liberally mulched with rough manure, that obtained from the pigyard being the best for the purpose. Where this mulching would be considered unsightly, it may well be surfaced over with soil, care being taken to prevent chickens and birds from scratching it about. Briars for budding are also breaking very strongly, and these now require some attention. About three shoots should be left, so as to eventually form a neat well-balanced head. A mulching will also greatly benefit these, and add considerably to the successful operation of budding. All strong young shoots from buds inserted last season require to be supported with light stakes fastened to the stem of the stock, and this will prevent their being blown out by heavy gales of wind.

THE BEE-KEEPER.

SWARMING AND ITS PREVENTION.

CAN swarming be prevented without any great difficulty in ordinary seasons, and in hives not easily admitting of the excision of queen cells? I am inclined—and Mr. Payne was evidently of my opinion, as may be gathered from his excellent advice often given in the early numbers of this Journal—that with ordinary care and by the judicious employment of supers and the retention of young healthy queens in autumn, the swarming mania may in all cases, except in accidental death of the queen, be avoided to a certainty. Many bee-keepers are most anxious to bring about such a desirable result, and it is my wish to give the details of management necessary for that purpose.

In passing one point may be noticed, and that is that in

animals, by judicious selection of parents most objectionable features in a race may be gradually caused to disappear, or in another case any qualities not possessed by the race in general may be obtained by this careful selection. Why cannot the same be effected with regard to bees? Swarming is to many an objectionable feature in bee-keeping. Increase of stocks is not desired. Let, then, some experienced person say whether this change in the habits of the bee may not be effected by care on the part of the apiculturist: such care in the end, after some generations have passed by, effecting a radical change in the very nature of the bees, and giving them no inclination to swarm unless compelled either by extraordinary neglect on the part of the bee-master or the unfortunate death in the honey season of the queen mother reigning in the hive.

Mr. A. Pettigrew stated in his treatise on the subject that supers do not prevent swarming. Is that to be considered correct? To attempt to speak in opposition to so great an authority might be presumption if the intention were to upset his theory; but as it is only intended to enlarge upon his theory it cannot be considered anything more than attempt to prove his rule therein laid down by an exception. If I have a hive in May very strong in bees and do not wish to obtain an increase of stock, the course I adopt, and advise others to make trial of, is to put on, say, a 10lb. super, which, if the stock be ready for storing surplus honey and of good size, will in ten days' time be about two thirds full of comb and the bees be crowded so as to induce them to think of swarming. If, however, this nearly filled super be lifted up and another placed beneath it, the bees will by this increase of storage room be kept fully employed. They will gradually complete the first-put-on super, which may then be removed, the second-placed one then being on the top and another placed beneath it, and so on until the honey season draws to an end, when the supers may be stored away as they are gradually finished, no fresh ones being placed on the hive. This plan, then, if carefully followed out so that the bees are never overcrowded, will in most cases entirely prevent the sending forth of swarms; but if the supers be placed but one day too late the mania may and generally does set in, and when the bees are determined man's attempt to upset their decision is futile, and generally ends in a great and costly waste of time when honey being most abundant the profits of the bee-keeper ought to be daily accruing.

This management, taught by Mr. Payne in days gone by, proved to be useful, and known to be successful, cannot for simplicity be equalled, and can surely not be objected to on the score of trouble by even the most enthusiastic followers of the bar-frame system with their queen-cell excision, queen cages, and other attempts to frustrate what is, after all, the natural instinct of the bees to accomplish the perpetuation of their species.

This is not theoretical only, but is at my own apiary in practical use, giving a good illustration of its advantages. Last year the success was complete, not a swarm being thrown. This year my stocks were ready, all of them, in the last week in April, to work in supers; in fact, did begin to work in them, but were compelled to desist by the bitterly unseasonable weather of that time. In the meantime I fed them regularly. On the 23rd of last month the weather changed, and all supers were again replaced, and wonderfully well they have worked in them since, many containing sealed combs. One stock is at full work in 63 lb. sections, another in a 40 lb. super, and others in supers suited to the size of their hives and their individual circumstances. There is no sign of swarming. One not supered in order to try the method swarmed in May.—FELIX.

THE LATE REV. H. R. PEEL.

THE Committee of the British Bee-keepers' Association, at their meeting held on the 10th inst., Thos. W. Cowan, Esq., in the chair, unanimously passed the following resolution:—

"The Committee of the B.B.K.A., having learnt with the deepest regret

of the death of the Rev. Herbert R. Peel, desires to place on record the sense it entertains of the irreparable loss the nation, the B.B.K.A., and his personal friends, have sustained by his premature and most lamentable decease. For many years he acted as Hon. Secretary to the Association, and threw himself into the work with an ability, energy, and tact that could not be surpassed, sparing neither time, trouble, nor expense to extend a knowledge of scientific bee-keeping amongst all classes throughout every part of England and Wales.

"To him the establishment of County Associations affiliated to the British Bee-keepers' Association in nearly every county in England and Wales is mainly due, and to this organisation must be attributed in a very great degree the advance in the general knowledge of bee-keeping throughout his native land, which has placed England in so short a time at least on an equality with other countries.

"All this work was done from a sincere desire for the public good and the promotion of the general welfare of the community.

"The Committee, in expressing their sincerest sympathy with Mrs. Peel and his sorrowing relatives, beg to assure them that the recollection of Mr. Peel and his many good deeds will be ever present with them, and his name will always be associated with the progress and extension of bee culture in England.

"They trust that the consciousness of the good effected by Mr. Peel will afford his relatives some consolation under the sudden and grievous blow which has fallen upon them."

It was further resolved that some steps should be taken to raise a fund for the purpose of carrying out those objects which were dear to Mr. Peel, and thereby to perpetuate his memory. The following resolution was carried unanimously:—

"That bee-keepers and others be invited to subscribe for the purpose of raising a fund in memory of the late Rev. H. R. Peel, to be invested, and the interest to be devoted annually, triennially, or at such other interval of time as the Committee of the British Bee-keepers' Association may from time to time think fit, to a prize or prizes to be given to cottagers in connection with the advancement of bee-keeping in the United Kingdom.

MOVING BEES IN THE SPRING.

SPRING is usually the best season to buy and to move bees, for the hives have then less honey and less brood than at most other seasons. In moving them three things are essential:—1, That they have good ventilation. 2, That the combs be securely fastened so that they cannot shake about. 3, That the bees be securely fastened in. With bees in box-hives all that is necessary, as a rule, is to turn the hive bottom-side up, letting it stand on its top, and then to tack wire-cloth securely over the bottom or open end. In these box-hives the combs are securely fastened by the bees to the top and sides, and cannot shake about. And if the hive is transported standing on its top, the open bottom will give ventilation, and the wire-cloth will confine the bees.

Hives with moveable combs must have the combs so fastened that they cannot shake. If such combs have not been lifted from the hives, nor their fastenings broken loose, since the previous year, they can often be transported some distance without any other fastening than what the bees gave the combs the previous fall. The gluing done by the bees, and the little supports they often build between the combs, are sufficient, with careful handling, to hold the combs in place. But it is best to be very careful about this.

If there is any doubt about the combs being secure, better take the trouble to fasten them rather than have them strike together and kill the bees in transit. If most of the combs are secured, and only now and then a loose one, the loose ones can be fastened by boring the ends of the top bar with a bradawl and setting a small wire nail through the top bar into the hive. But when most of the frames are loose, or when the bees are to be sent some distance, with danger of rough handling, it is always best to take special measures to fasten the frames both at top and bottom. To fasten at bottom I use a bent wire. Have screws or nails set in a board so that as you wind the wire from one to the other to make a series of angles like the letter W. When this is of the right length to stretch across the hive cut it off, leaving the ends about three-fourths of an inch long. Now put this wire in the bottom of an empty hive, putting it at a right angle with the direction in which the frames hang. Drive the ends of the wire into the sides of the hive, and, if necessary, fasten the wire at two or three points on the bottom board by using very small staples, like blind staples. The wire will then stand with its projecting parts upright. Now lift the frames of comb of the colony you wish to transport from the old hive and hang them into the prepared hive, with the bottom bar of each frame hanging down into one of the open angles of the wire. The wire projecting upon each side of it, will prevent the frame from swinging.

To keep the tops of the frames from jarring together, a thin strip of wood of the right length can be prepared by driving nails through it so that they project about an inch. Then lay this strip across the tops of the frames, with the nails projecting down between the frames, and fasten the strip at each end to the hive. The projecting nails between the frames will keep them in place. Now cover the whole top of the hive with wire-cloth, leaving off honey-board or quilt or enamelled cloth, or whatever you use to cover the tops of the frames, letting the whole top of the hive have no other cover except the wire-cloth. The wire-cloth confines the bees perfectly, it gives abundant ventilation, even in the hottest weather, and it allows the bees to be seen by everybody. This last is an important point in sending bees by express. The average porter has an intense horror of stings. Now, if he sees a whole colony of bees with nothing between himself and them except the wire-cloth, he will handle those hives with the most tender care.

Then at evening, when all bees are in the hives, nail a strip across the entrance, which will effectually shut them in. Of course it is understood that enough honey is in the combs for the use of the bees. It is a good plan, especially in warm weather, as you are preparing the hives for shipment, to lift up one of the empty outside combs, hold it horizontally, pour evenly over the surface from a pint to a quart of water. The wand will mostly run into the cells, and when the comb is hung back will stater them, and will give the bees needed water during the journey. I have shipped

many bees packed in this way and never lost one.—REV. O. CLUTE (in *The American Bee Journal*).



TO CORRESPONDENTS

* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Tulips (Felton).—We believe named bizarre, byblœmen, and rose Tulips are included in the collection of Mr. Charles Turner at Slough. As we have repeatedly stated, we attempt no such invidious and impossible task as stating the "best" place for getting Pansies or anything else. They can be had alike good from dozens of florists.

Gloxinias and Achimenes (A. Z.).—The leaves sent were infested by thrips and red spider, which clearly proves the plants have been grown in too dry an atmosphere. The only remedy is to distribute more moisture and to afford shade from bright sun. The plants may be syringed, or, better, dipped in a solution of some insecticide such as nicotine soap (6 ozs. to the gallon), and when dry thoroughly syringed. We fear the plants will not recover, as they are in a very bad state.

Furnace not Drawing (J. C.).—There is something seriously wrong with the upright boiler or it would have a good draught, as we have one, and it draws better than any other, and the buildings on every side are considerably higher than the chimney from the boiler. Upright boilers are the best for draught, hence we conclude there is something peculiar in your case, the boiler being improperly set or the flue not rightly constructed. We do not think a roof 40 feet distant ought to interfere with the draught, and before carrying the chimney higher we should try the effect of a pot—one that would prevent a down draught—and with this, other things being in proper condition, the fire ought to draw well.

"Invention" (F. T. D.).—So many papers are sent to us every week, that unless a note or post card is sent directing our attention to any particular marked paragraph, it is quite likely to be overlooked. If we were to search down every column of every paper that we receive we should have very little time left for more important duties. We have not seen the paragraph to which you refer, and the paper containing it is now beyond our reach, and it will be necessary for us to receive another if you still desire us to examine the report.

Rating Nurserymen's Greenhouses (L. B.).—You ask if it is "customary or right to assess nurserymen's greenhouses for the poor rates." We suspect it has become largely "customary" by many nurserymen paying the rates but the "right" to claim them is another matter. Lord Kenyon decided there is no more right to assess the greenhouses of a nurseryman than the stall of a cobbler, because both are equally necessary for obtaining a livelihood. This is an important question that should be tested in a supreme court, and the case for nurserymen appears good, though obviously no individual can be expected to act alone, but by a combination of effort the cost would be scarcely felt, while the gain might be great and permanent.

Peaches Dropping (Alva).—You do not say one word as to the condition of the trees, weight of the crop, the treatment accorded, or even whether the trees are under glass or in the open air. The fruit drops from various causes—defective fertilisation, faulty ventilation, red spider extracting the juices from the leaves, overcropping, sluggish root-action, or an inadequate supply of water. The fruit indicates that it is not well supported, and if the growth is not healthy very copious supplies of liquid manure with a good mulching of rich stable manure over the roots would have a beneficial effect, on the trees at any rate, as it may be too late to save the crop. This is as good a reply as you can expect from your one line of inquiry, and total absence of information of the nature indicated, and which most gardeners would have seen was necessary for the case to be understood. However, we have done the best we could for you, if you have not the best you could for yourself.

Lapageria Leaves Scorched (M. C. B., Hants).—You say your plant is in "loose" soil. The Lapageria prefers a rather firm yet somewhat spongy and elastic soil, ample provision being made for drainage, so that very copious supplies of water can be given during the growing season. Shade from bright sun is also of advantage for the production and retention of dark-green leaves. Judging by the appearance of the leaf you have sent, we are of opinion that the escape of moisture from the plant by evaporation or transpiration has been disproportionate with the quantity imbibed by the roots. You had better either give more water or employ shade, or both, according to your judgment and as may be the most convenient; and further, if you give clear soot water, the colour of pale ale, it will also in

all probability act beneficially. This may be made by tying some soot in an old sack or canvas and immersing for a day or two in a tub of water. If you throw a good lump of lime in after the virtues of the soot are extracted and take off the scum that forms on the surface, the water will be quite clear. It will probably do your plant good to syringe it well every afternoon when the sun is declining. If the soil is very loose we should make it somewhat firm by treading, but not when it is wet.

Decorating a Dessert Table (Novice).—It is difficult to give any instructions for decorating a table, as so much depends upon individual taste; but a few general rules are applicable, and should be kept in view by those undertaking the work. In the first place, whatever is used must be low, as to allow of a clear view from one side of the table to the other, or, if not that, the plants or flower-stands used should be so tall as to obstruct the view as little as possible, hence the heavy objects must be kept close to the table, the light ones rising above it. The tallest stands must be in the centre, and there the greatest effort at ornamentation should be made, and for a table of the size you name it will not need to be very large, but four plants disposed in a square around it will be all that need be attempted. About four horseshoe vases will be required at the corners, and a dozen finger glasses filled in the lightest possible manner will give all that is required in the way of flowers. Employing flowers of decided hues, harmonising in colour or contrasting, but not violently, and keeping as much as circumstance admit to one kind of flower, as, for instance, Roses, Clematises, or any plants that afford a good variety of colour. Pyrethrums, Marguerites, Chrysanthemums, and other flat flowers always show well together, and so do tube-shaped flowers, as Gloxinias, Allamandas, and Dipladenias. Lilliums also afford a fine arrangement. The main point of all is not to attempt too much, as that is certain to impart a crowded heavy appearance, and only displeases. Good fruit—not too much of it—neatly set up is indispensable, and a floral design on the cloth is always appreciated when of a bolder type than those in the flower-stands rising from it, but a clear space must be left all around of about 16 inches.

Orchids and Ferns (Rosa).—Many houses are similarly constructed to yours, and yet both Ferns and Orchids are successfully grown in them, and as far as we can judge from your letter there is no reason why your plants should not be equally satisfactory. At this time of year very little or no artificial heat will be required, and syringing the rocks and Ferns twice a day should be sufficient, but this must be determined by the weather, as on dull wet days no syringing would be required. If the rocks are new and porous it will take some time for them to become saturated with moisture, but when that is effected small mosses and liverworts will appear, and will assist in retaining the necessary moisture. A strong heat is never advisable, even in cold weather, in such a house, and it would be better to avoid heating the pipes excessively, preserving an even moderate temperature, and there will then be less difficulty in keeping the air at the required state of humidity. Troughs may also be fitted upon the pipes and kept constantly filled with water. The Orchids would be benefited by placing them upon some substance like shells, shingle, fine gravel, or even small cinders or coal. If that is inconvenient, adopt a combination saucer and stand similar to that recently described and figured in this Journal, page 349, April 30th, 1885, or you can improvise something of the same kind by inverting pots in ordinary saucers and standing the plants upon them, filling the saucers with water. These act both as insect traps and as reservoirs of moisture, which, steadily evaporating, refreshes the foliage of Orchids and similar plants considerably. The larger house you mention appears well suited for Cattleyas, Lælias, and other genera that require more roomy structures and more free exposure to sun than non-pseudo-bulbous species and ordinary cool house Orchids of the Odontoglossum type. If you will state what Orchids are included in your collection we shall be pleased to give you more particular directions as to their culture.

Vine Leaves Failing (R. H. T.).—Your Vines are in an enfeebled state and there is a good deal of red spider on the foliage. This, with the sunny weather that has lately prevailed, causing excessive transpiration, is quite sufficient to account for the yellow blotches, the spider and sun having extracted the moisture faster than it has been supplied by the roots. As there were no berries in the box when it reached us we are not able to judge as to how far it would be prudent to apply Fir tree oil or any other insecticide; but this we know, we could dislodge the enemy with pure water, but more forcibly applied and in far greater quantity than is used in ordinary syringings. We should give every leaf a thorough drenching, and not many insects would remain. A good method of applying insecticides is with a spray-distributor the nozzle of which can be placed between the bunches and close to the leaves, the under sides of which are made wet, like dew, while little or none of the solution falls on the berries. But apart from extirpating the insects the Vines need more support. The greatest need of all, however, is a mass of active fibrous roots working freely in fresh soil not far below the surface. As the roots cannot be safely disturbed now give liquid manure freely. If you have drainings from a manure heap nothing could be better, and failing this mix three or four ounces of guano in a large garden can of water and pour it on each square yard of the border if it will pass in freely. Nitrate of soda is quicker in its action, and about half the quantity suffices, but if you use it have some warm water for mixing, as the nitrate lowers the temperature of water considerably in which it is mixed, and the warmer the water is for your Vine roots the better. In the autumn remove some of the old soil and add fresh, on which point see our reply to another inquirer. Guano water sprinkled freely in the house when closing, each afternoon, would supply the leaves with ammonia, which they enjoy, and the red spider does not; but it should not be used unless the Grapes are stoned, and never until the sun is declining. A few hours afterwards open the top ventilators an inch or two and leave them open all night, admitting more air as soon as the temperature commences rising in the morning. As your vinery faces the east early ventilation is of vital importance. Assuming the sun shines on the house at four o'clock and the sashes are kept closed till six or after, flimsy, blotchy red-spider-infested leaves can only be expected in hot weather.

Butterfly Orchis—British Orchids (A. F. M.).—You are fortunate in finding a supply of the lovely Orchid, *Habenaria ibifolia*. It may be safely moved, and will improve and make a good addition to any collection of hardy plants. We find the best way is to dig them up with a trowel when

in bloom, running it down deep enough to take the plant up with a good ball of earth round the roots, and transplant them where wanted as soon as possible, watering daily through a fine rose until they are established and rain falls, after which they may be safely left to themselves. Any turf or weeds in which they are growing when lifted should be cut off with a sharp knife instead of pulling them out, so as not to disturb the little ball of earth each one should possess; also to plant a little deeper. We have found suitable places for them at or near the base of rockeries, as there is usually more moisture than when near the top; they also do well transplanted in grass, but of course it must not be cut with a mowing machine or scythe till the foliage has died. We have a number of them in long grass near the lawn, in which hundreds of Bluebells, Narcissus, Snowdrops, Crocus, Squills, and other bulbs are planted, and are usually all mown down about haymaking time. Some of this Orchid that were planted this time last year are now in flower, with from eighteen to twenty-four flowers on a spike, the latter number on the strongest bulbs. One was planted on the top of the rockery two years ago between the crevices of stones; it flowered the year after, but it has not done so well this year. No doubt last summer was too dry, as another planted at the same time lower down, where there is more moisture, has a spike of eighteen flowers, and is certainly stronger and finer than when planted there. An annual top-dressing of leaf soil suits it, as it does most other plants on the rockery. Other British Orchids now in and showing flower are *Ophrys muscifera*, *Ophrys aranifera*, *Ophrys apifera*, *Orchis mascula*, *O. maculata*, *O. latifolia*, *O. Morio*, *O. pyramidalis*, *Gymnadenia conopsea*, and *Aceras anthropophora*. All the above were dug up and planted when in full bloom, and have not in the least degenerated; but some, particularly *Orchis mascula*, *O. latifolia*, *O. maculata*, and the *Aceras*, are much finer than when planted two years ago. The Bee Orchis (*O. apifera*) is about the same, but the three bulbs that were planted together and had three spikes last year, this year has only two. We have several clumps of *Orchis maculata* with twenty or more spikes in each, with several varieties as regards colour. A good quantity of decayed leaf soil was well mixed in when the rockery was made, and in it they seem to delight, many of the spikes being more than 18 inches high, and with more than fifty flowers on each. This is one of the best species from a "cut flower" point of view, and anyone fortunate enough to find a wood with plenty of them growing in, and with permission to dig them up, may safely do so when in full bloom, planted them in a good place in the kitchen garden, where they may be allowed to remain, and will be rewarded with plenty of flowers annually. The colour of this species varies from nearly white to crimson, thus showing that some hardy Orchids are as variable as some of the exotic kinds, notably *Odontoglossum Alexandrae*. Several firms who make a specialty of hardy plants also cultivate and sell British and other hardy Orchids, and some species, particularly the North American Ladies' Slippers, have been greatly improved by cultivation.

Unhealthy Vines—Aerial Roots (C. E. B.).—The Vines, of which you have sent samples both of old wood and this year's laterals, are certainly in an enfeebled state, and we suspect this has been brought about mainly by mismanagement in the house. It is not unlikely the Vines were overcropped when young; but whether they were or not, they have not been judiciously ventilated, the atmosphere has been too moist, and the foliage probably overcrowded; at any rate, it has been, and is, imperfect, and scarcely any nutrient matter has been stored in the stems. The wood produced last year was certainly not matured, this being apparent by an examination of the spurs, and the growth of the present year is defective, and cannot be well fed by such flimsy leaves. Their want of texture and long thin stems, with the clusters of adventitious roots, force us to the conclusion that the ill-condition of the Vines is mainly the result of faulty ventilation and mismanagement of the growths and foliage in summer. It is quite true that aerial roots are consistent with good crops of Grapes. We have seen very fine crops with adventitious roots clustering from the Vine rods; but the Vines were strong and healthy, with dark stout-textured leaves and plenty of active roots working freely near the surface of a good border. It is quite a different matter when debilitated Vines produce these roots in abundance year after year, as they then certainly indicate, and have in fact contributed to defective root-action in the soil. In the case under consideration the Vines were not a doubt good originally, and the border may have been good, yet it must never be forgotten that the effects of the best possible border may be nullified by mismanagement of the growths. Many borders are also mismanaged. You say the one in question has been "attended to." We know of several instances where Vine borders have been attended to by digging and making the surface so light that the best roots were positively driven out of it. A light loose dry surface is the most effectual factor in sending the roots downwards; they will enter the worst of subsoil if it is moist, no matter how good the soil is above if it is loose and dry. We venture to say the border referred to is practically destitute of active feeding roots anywhere near the surface. If it is not, so much the better, and the Vines may be invigorated by top-dressings of manure, and by permitting as many leaves to expand as can be fully exposed to the direct action of light and no more, ventilating more freely, and especially very early in the morning, and maintaining a genial, buoyant atmosphere. If there are few or no roots in the border, as we suspect is the case, the Vines should be lifted partially or entirely, and the roots placed in fresh soil. Early in October would be a suitable time, keeping the foliage fresh by shading and syringing, so as to induce the extension of fresh roots before winter. That is the point to insure, the retention of the leaves after lifting; then the sooner it is done the better, because of the longer time provided for root-extension. Vine borders should be firm and moist on the surface in summer, and they then become netted with fibres, and it is only then a question of feeding them, regulating the growths for the unobstructed development of the foliage, keeping the leaves clean, and maturing the growths for good crops of Grapes to be produced without any shanked berries. Thousands of Vines are spoiled by allowing them to produce too many laterals by half, with hundreds of leaves that can never perform their functions of elaboration and secretion. The leaves then become so many exhausters instead of food-producers, for they are continually appropriating from the border and giving nothing in return to the Vines. We have entered somewhat fully into this question, which is a typical one, and our remarks equally answer another inquirer ("B. T. V.") who has sought information on Vines that

"once bore freely but now do very little good, producing poor crops of shanked Grapes." Vines (Black Hamburgs) trained on the spur system, should not be much less than 4 feet apart, the laterals 18 inches asunder on each side of the canes, and the roof wires 18 inches from the glass, for the production of first-rate Grapes, and such they will produce for years under good management. See also reply to "R. H. T."

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (*N. J.*)—It is impossible to name diminutive specimens sent loose in a matchbox. We are always willing to oblige our correspondents if they exercise a little care in the matter of packing, so that the specimens reach us in a recognisable condition. (*A. J. B.*)—The yellow flower is *Galium cruciatum*, the other is *Lychnis vespertina*. (*H. O., Romsey*).—1, *Oncidium spbacelatum majus*; 2, *Ceanothus rigidus*. (*B. P.*)—1, *Magnolia conspicua* variety; 2, *Magnolia acuminata*. (*J. R.*)—1, *Alchemilla arvensis*; 2, *Vicia hirsuta*; 3, *Valeriana olitoria*; 4, *Sisymbrium officinale*; 6, *Anthemis arvensis*. (*P. H. N.*)—1, *Ornithogalum umbellatum*; 2, *Habenaria bifolia*, which is frequently found in Beech woods. 3, *Orchis maculata*. (*M. F. B.*)—The flowers were much withered through being packed in dry cotton wool, and were in consequence almost unrecognisable. As nearly as we could determine them, however, they were *Clematis montana* (white), and *Campanula glomerata* (purple), the single leaf of the succulent plant being quite insufficient.

Supering Bees.—All you can do is to put on a veil and gloves and proceed quietly with the work. Any semblance of bustling exasperates bees.

COVENT GARDEN MARKET.—JUNE 17TH.

MARKET heavily supplied with both fruits and vegetables, and business brisk. Large consignments from the Channel Islands reaching us, consisting of Grapes, Tomatoes, and new Potatoes.

		s. d.		s. d.		s. d.		s. d.	
FRUIT.									
Apples	½ sieve	0 0	0 0	Lemons .. ..	.. case	15 0	to 21 0		
Chestnuts	bushel	0 0	0 0	Oranges .. ..	.. .. 100	6 0	10 0		
Cobs, Kent ..	per 100 lbs.	0 0	0 0	Peaches .. ..	.. per doz.	6 0	18 0		
Currants, Red ..	½ sieve	0 0	0 0	Pears, kitchen ..	dozen	1 0	3 0		
" Black ..	½ sieve	0 0	0 0	" dessert ..	dozen	0 0	0 0		
Figs	dozen	4 0	6 0	Pine Apples English ..	.. lb.	2 0	3 0		
Gooseberries ..	½ sieve	2 0	3 0	Strawberries ..	.. lb.	2 0	4 0		
Grapes .. ..	.. lb.	2 0	5 0	St. Michael Pines ..	each	3 0	7 0		
VEGETABLES.									
Artichokes	dozen	2 0	to 4 0	Lettuce	dozen	1 0	to 2 0		
Asparagus	bundle	2 0	5 0	Mushrooms .. ..	.. punnet	0 0	1 4		
Beans, Kidney ..	100	1 0	0 0	Mustard and Cress ..	.. punnet	0 2	0 0		
Beet, Red	dozen	1 0	2 0	Ouions .. ..	.. bunch	0 3	0 0		
Broccoli	bundle	0 9	1 0	Parsley	dozen bunches	2 0	3 6		
Brussels Sprouts ..	½ sieve	0 0	0 0	Parsnips	dozen	1 0	2 0		
Cabbage	dozen	0 0	1 0	Potatoes .. ..	.. cwt.	4 0	5 0		
Capicums	100	1 6	2 0	" Kidney .. ..	.. cwt.	4 0	5 0		
Carrots	bunch	0 3	0 4	Rhubarb .. ..	.. bundle	0 4	0 0		
Cauliflowers	dozen	2 0	3 0	Salsafy .. ..	.. bundle	1 0	0 0		
Celery	bundle	1 6	2 0	Scorzoner .. ..	.. bundle	1 6	0 0		
Coleworts	doz. bunches	2 0	4 0	Seakale	per basket	0 0	0 0		
Cucumbers	each	0 3	0 6	Shallots .. ..	.. lb.	0 3	0 0		
Endive	dozen	1 0	2 0	Spinach .. ..	.. bushel	2 0	4 0		
Herbs	bunch	0 2	0 0	Tomatoes .. ..	.. lb.	0 9	1 0		
Leeks	bunch	0 3	0 4	Turnips	bunch	0 6	0 0		



THE HAY HARVEST.

(Continued from page 495.)

THAT a strong green succulent growth of Grasses and Clover in full bloom affords at that precise stage of growth the best possible materials for making good hay is established beyond dispute. It is nevertheless equally certain that much Grass is left uncut long after it has passed the flowering stage, often till the seed is falling and the stalks are brown and sere, under the mistaken idea that by so doing more and better hay is obtained than when it is cut earlier. This, however, is only one of the many ways in which grass reserved for hay is mismanaged, and it is quite in keeping with complaints made recently of bare pastures and no hay. Nor can we wonder that there is no hay if good people will persist in turning cattle upon grass in April and expect to obtain a crop of hay from it in June. Let us be consistent, and at least give the grass for hay as fair treatment as any other crop. Briefly stated, fair treatment consists in a dressing of farmyard manure by the end of September, or of artificial manure in February, when the sheep are taken off, and the grass is then left untouched by sheep or cattle till

after the haymaking. By this simple but sensible plan we obtain an early strong growth of grass with so much certainty that for the moment we felt puzzled upon reading at the end of May of bare pastures and no hay crop.

Granting, then, that the grass is the best for hay before any of its juices have been absorbed in the process of seed development, we have to consider how long we require to harvest the whole of the grass, and make our arrangements so that the last of it shall not be spoilt. There must also be an allowance in our calculations for unsettled weather, which is our chief difficulty in haymaking; yet with care, watchfulness, and promptitude in turning every hour of fine weather to account, we have never had a summer so wet but that sweet wholesome hay could not be made. It is true that some of the hay has more than once been in cocks for ten days or a fortnight; but it has been saved eventually, and though somewhat dark in colour it was wholesome. We are free to acknowledge a preference for hay that has never been in cocks, as being both cheaper and better; but in unsettled weather cocks preserve hay from becoming washed and spoilt, and there is no danger of mustiness if it is dry when put in the cocks.

Begin to mow with a steadily rising barometer, and with bright hot weather the tedding machine may at once be used. We have frequently passed it two or three times over the hay in a single day with advantage, and then before night the hay is drawn into slight rows, termed wind rows, with hand rakes to allow the air to pass freely through it, the dew to evaporate quickly in the morning, and that the numerous green locks of hay left in hollows by the tedder may be moved, and the whole left in the best possible manner for the following morning. If the night proves fine, and is followed by a sunny morning, then the hay may be shaken out again as soon as it is dry; but if rain has fallen in the night it is better to wait until the top and sides of the rows are dry, and then to pull them over with the hand rakes, so that the whole may be fairly dry before the tedding machine is used again. The general plan, then, is to draw the hay into long wide rows with horse rakes, so that if ready for the ricks it may at once be put upon the waggons, or if not the tedding machine may pass up and down the rows once or twice. If the weather becomes unsettled the hay can then be put quickly into cocks; but they are uncalled for in fine weather. However dry the hay may be when put into cocks, it must never be taken to the rick till the cocks have been shaken out sufficiently for the hay to be fully exposed to the air, or there will be a risk of mustiness. Never let an hour of fine weather be lost during the hay harvest; when once it is in full swing there will always be some hay ready, or almost ready, for the rick, which is precisely the condition in which it is most liable to damage. Make the most not only of fine days but of fine evenings; better, far better, is it to pay double rates of wages for overtime than to run the slightest risk of exposing the hay to rain, apart from the greater outlay involved in the subsequent work of getting it dry again.

Avoid making very small ricks; the only practical reason for small ricks must be the want of a rick-cloth to keep off the rain. We can hardly conceive of a farm manager being without a rick-cloth when he has a large area of pasture laid down for hay, and yet we know of many an instance of this careless wastefulness, by which the hay is so often spoilt. The bottoms of our ricks are 33 feet long by 18 feet wide; the rick-cloth is 12 yards by 10 yards; the cloth pole is 36 feet, and the two upright end poles 34 feet in length. There are guy ropes for the uprights and pulley blocks and ropes to raise and lower the cloth, which is never suffered to lie closely upon the rick, but is kept sufficiently above it to throw off rain, and to allow the vapour arising from the rick to escape freely from it. The rick is built upon a double layer of brushwood faggots, and there is an air-shaft—or rather a shaft for the escape of hot vapour—made in the centre of the rick by means of a sack stuffed with hay and

drawn gradually upwards with the building. In a wet summer we make two such shafts or safety valves, neither of them being in the exact centre, but on each side of and a few feet from it in the direction of the ends. It has been said that such shafts spoil the hay close to them, but we have never found it so, nor can we understand what could have led to so erroneous an impression, for the narrow shaft only remains open long enough to afford vent to the hot vapour caused by fermentation, and becomes permanently closed as the rick settles down. The rick-cloth is always let down and made fast over-night, but on fine mornings as soon as the dew or any mist is dispersed, it is rolled round the pole and drawn up well out of the way to let sun and air play fully upon the rick.

WORK ON THE HOME FARM.

The very hot weather has proved so trying for our long-woolled sheep that the shearing was done as soon as possible after the washing. We strongly object to shearing the sheep in May and subjecting them to risk of exposure to inclement weather; but in June there need be no hesitation. It is difficult to get careful men for this work, and in any case the common practice of allowing shearers a large quantity of beer while at work is decidedly wrong. Greed for drink leads the men to imbibe so freely that there is much slovenly work and brutality, the skin is cut, and the wounds are at once attacked by flies. The head shepherd or bailiff should keep a close watch upon the work and dress every wound before the sheep are let out again. The feet should also be examined, and every case of foot-rot carefully treated; broken hoofs must be cut off, filth or hard pieces of soil washed away—every affected foot is undoubtedly better for being washed, and then Gell's ointment should be well rubbed in. It is impossible to effect a cure of the whole of the sheep, for some will have hot swollen feet, but no external wounds. With such, bathing may do good, but nothing more can be done till the hoof cracks and there is a discharge of humour from it. That there is much general negligence of sheep afflicted with this troublesome complaint there can be no doubt, requiring as it does much patient perseverance to overcome it. We have effected a complete cure of it in our Southdown flock, and as a first step to such a desirable end in our long-woolled flock all suffering from foot-rot will be put in a separate meadow as soon as lamb-weaning is over. We have already taken 200 of the early lambs from the ewes and put them upon Trefoil, with a little nourishing dry food. Haymaking will now be upon us, and we have been pushing on the hoeing and thinning of Mangolds and Swede-sowing. The clearing of fallows and sowing of White Mustard is still being done, and we shall continue this work as opportunity offers till the middle of July. Land which from its foulness has been left uncropped till the present time as fallow, should have our special attention, and not be left till we have nothing else to do, for that time seldom comes, and we regard bare uncropped soil at midsummer as a serious loss upon a farm. We may repeat here how decidedly profitable green crops are near large towns—£6 an acre as the crop stands may be stated as the lowest price we have heard of this year, and all harvest expenses and risk are avoided. Of such crops we may mention Rye, *Trifolium incarnatum*, Winter Tares, and—most profitable of all where it answers—Lucerne. As the *Trifolium* and Tares are cleared off the land, it may be prepared for a crop of White Turnips, or if required for winter corn there is still time for a crop of White Mustard. We are constantly doing what we can to draw the attention of all farmers of light land to the importance of Winter Oats as a paying crop, and we hope to induce many more to give them a fair trial next season. Meanwhile, try and see a good field of Winter Oats this year in July, and remember that it represents a sure crop, early green food for sheep, and a saving of labour in spring.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	9 A.M.				IN THE DAY.				Rain		
	Barometer at 32° and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Temperature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.		On grass.	
1885.											
June.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
Sunday	7	29.857	68.9	62.8	S.W.	60.2	73.4	56.2	110.9	53.1	0.283
Monday	8	29.741	60.6	59.8	N.	60.6	62.8	57.7	72.2	54.9	0.786
Tuesday	9	29.983	52.3	51.1	N.W.	58.8	64.2	50.1	93.7	50.9	0.010
Wednesday ..	10	30.353	53.6	49.4	S.E.	57.4	67.3	47.8	116.7	40.8	—
Thursday	11	30.405	55.2	47.8	E.	57.2	67.7	41.4	108.3	36.4	—
Friday	12	30.372	61.9	53.7	W.	57.6	73.4	46.4	107.9	42.9	—
Saturday	13	30.232	66.8	53.0	N.	58.2	76.8	48.6	112.0	41.2	—
		30.135	69.3	54.7		58.6	69.4	49.7	103.1	46.2	1.079

REMARKS.

7th.—Fine day, but frequently cloudy.
 8th.—Heavy rain from early morning.
 9th.—Wet morning, fair afternoon, fine bright evening.
 10th.—Fine and bright.
 11th.—Fine throughout.
 12th.—Fine clear morning, oppressive afternoon.
 13th.—Fine and bright.
 Cool and rainy in the early part of the week, and bright and fine in the latter part. Rainfall and barometric pressure above the average; temperature almost exactly the average.—G. J. SYMONS.



COMING EVENTS

25	TH	Walton-on-Thames Show.
26	F	
27	S	Canterbury and Brockham Shows.
28	SUN	FOURTH SUNDAY AFTER TRINITY.
29	M	Maidstone Show.
30	TU	Bagshot (Roses) Show; Colchester Show.
1	W	Croydon, Ryde, Farningham, Cardiff, and Farnham Shows.

PLENTY OF EVERYTHING.

WHAT a comfort we experience when we are enabled to inform our friends that there is "plenty of everything" in the garden. If the truth were known this happy and most enviable state of affairs is far from being general, as the very best among us, and those perhaps with facilities for growing everything, are not unfrequently "short" of something, being then only too glad to receive assistance from a friend or friends. The best-laid schemes are very easily upset, gardeners, whether rightly or wrongly, being apt to consider they have more ills to contend with than the followers of any other profession have. It may be this has something to do with the vein of sympathy, or, to put it in a more expressive form, freemasonry, that exists among us, this including ready help to our brethren in need of it, and a welcome to each other, no matter whether we are personally acquainted or not. Outsiders cannot quite understand it, but it exists in a marked degree. Earnest amateurs delight to fraternise with and exchange opinions, cuttings, and plants with professional gardeners, and *vice versa*, to their mutual benefit. This is as it should be; but at the same time, if it is carried to excess it may easily destroy much of the self-dependence necessary to all of us, and without which we cannot feel at all sure of always having plenty of everything. For instance, Mr. Blank, on whom we have constantly relied for a supply when needed, may have completely failed with the thing we want, and would be only too glad to receive assistance from his neighbours. Our aim, then, should be to cultivate to the best of our ability all we require or space will permit of flowers, fruits, and vegetables. As the latter are, after all, the most material, and seeing we are not supposed to mix our topics, I propose to offer a few hints upon the best methods of securing plenty of vegetables for the winter.

Past immunity from severe frosts may perhaps induce many to overlook the fact that a severe frost may almost clear our garden of green vegetables; and all must, therefore, continue to bear this in mind, and plant accordingly. Readers are or ought to be fully impressed with the wisdom of planting Broccoli, especially on firm ground, with the aim of causing them to form sturdy and hardy growth. Some, I am aware, in spite of frequent advice to the contrary, continue to put out this serviceable class of vegetables on loose rich ground with the result of the production of extra fine plants, and which, unfortunately, are the first to succumb to a severe frost. On fairly good firm ground, such as old Strawberry beds, an undug Leek quarter, or ground cleared of early Peas, Broccoli, whether planted with the assistance of a crowbar or in drills drawn with a heavy hoe and well soaked with water, will grow sturdily yet strongly, the most vital part—viz., the stems, being hard and well protected with leaves. An extra severe frost will cripple even these, but as a rule they will survive and produce high serviceable heads. Even in this case crowding should be

avoided, as it is better to feel almost certain of obtaining three good heads than to try for double that number, and risk making these weakly and most liable to destruction. On firm ground we usually plant in rows 30 inches apart, and the plants as far apart in the rows. Unfortunately, it is seldom sufficient firm ground is available for Broccoli, and we must perforce plant either in succession to or among the Potato crops. We prefer the first alternative, and plant a large breadth of Early Ashleaf Potatoes accordingly. We thus secure an almost certain sound crop of Potatoes, which can be cleared off and stored, the ground levelled and well trampled, which enables us to promote a fairly sturdy Broccoli growth. On loose rich ground the Broccoli ought to be planted in rows not less than 3 feet apart and 30 inches asunder in the rows, while if put out between the rows of widely planted Potatoes the haulm of the latter must be prevented from unduly drawing up the Broccoli.

Our garden is situated on a moderately sharp slope, the lower portion being much heavier and colder than the upper, and this we have to take into consideration when arranging the crops. We usually plant three breadths of Broccoli, one at the top, another in the middle, and the third at the bottom of the garden. About six varieties are relied upon, with perhaps one or two trial sorts, and of these, with one exception, an equal number of plants will this season be put out in each division. We may perhaps lose the whole of the lower rows and some of the middle plantation, but it will be a very severe frost indeed that destroys those on the top quarter. Consequently, if we have a mild winter, there will be abundance of Broccoli, and if severe a moderate supply in good succession. The exception above alluded to is Veitch's Autumn Protecting, this, on account of its being easily injured by frosts, being treated like the batch of late-sown autumn Cauliflower. Both are found exceptionally serviceable in November and December, and are planted in succession to early Potatoes on warm borders and on the top quarter of garden. To succeed these we have Snow's, which, if not sown too early and is planted in different positions, affords a long succession of fairly good heads. Next comes Veitch's Spring White, an excellent sort in every way, and this is closely followed by the popular Leamington, this maintaining the supply till May, at which time Model is available. The latter is a grand sort, and so also is Sutton's Late Queen, and these may safely be considered the best late sorts we grow. Ledsham's Latest of All proves to be a very fine late variety, in season about the same time as Model.

Brussels Sprouts I hold to be the most valuable winter green vegetable we have, and I always recommend amateurs to grow a good breadth of them in preference to several sorts of Borecoles and Savoys, especially if space be limited. They must be planted early, or not later than June (our principal plants are already well established) to be really profitable. They should also have fairly rich firm soil, as well as plenty of space, and under such conditions will prove very hardy and most productive from November to April, the close firm sprouts always being fully appreciated. Strong-growing sorts, such as Perfection and Aigburth, may well be planted in rows 3 feet apart and 2 feet from plant to plant, while the Imported and Paragon require rather less space. This season we are trying three new, or presumably new, varieties, and hope to find that one or more of them will be as productive as the two first above-named, and that the sprouts will not be so large.

Coleworts are also a favourite vegetable with me, and they are generally liked when cooked. The hardiest, and in my opinion best, Cabbage for this purpose is the London or Rosette; and Little Pixie, Shilling's Queen, and Nonpareil are also suitable and good. The seed ought to be sown by the middle of June or not later than the end of the month, and the plants be put out in odd vacant spots or borders at distances of about a foot each way. In this manner they closely occupy the ground, and yield really pro-

fitable neat little heads. Small Savoys are also the best in quality, notably King Koffee, Golden Globe, Early Vienna, Tom Thumb, and Little Pixie, the first named being as useful as any. These small growers can be dibbled in a foot apart in various positions, or may edge the borders filled with larger and later sorts, such as Early Ulm, Dwarf Green Curled, and the Drumhead. None of these require so much room as they frequently receive. The Drumhead grows quite large enough when disposed in rows 18 inches apart and the rows 15 inches apart in the rows, while the others succeed well with about 3 inches less each way. If the ground is fairly rich there is no necessity to dig the ground for Savoys, and most of ours succeed early Turnips on an east border.

Carrots in a young state are now in demand all the year round, and not much trouble is needed to have them in fairly large quantities. Very sweet and tender they are, and I am not surprised at the partiality for them. For a winter supply, or to succeed those which may be drawn from the rows sown early and intended to grow large, a little seed should be sown late in June, more early in July, and again at the end of the month, the latter being in an uncovered frame or in a position where they can be readily protected with a frame and mats during severe weather. If dry weather interferes with sowing, and supposing the soil is in a rough state, this should be freely watered a few hours before the attempt is made to work it, and then the ground will work readily enough. If fine and dry, first draw the drills and then water them through a coarse-rose watering pot a short time before the seed is sown, and this in preference to watering after the seed is covered. The dry soil encloses the moisture, and it is surprising how quickly all kinds of seeds germinate when sown in these moistened drills. It is like sowing seed on a hotbed. I ought perhaps to add that one good sowing early in July will afford a number of dishes often throughout the winter, but a heavy and constant demand is best met by making two or three sowings. Early Nantes is the best for this purpose, but we usually sow the remainder of the seeds of other sorts, such as James' Intermediate, Altrincham, and Long Red Surrey, and I have seen the latter particularly good during the winter. Those who have seed left of other varieties of Horn Carrots may partly or wholly rely upon these, the seed in all cases being sown thinly in rows about 9 inches apart, or broadcast and covered with fine soil, little or no thinning being required till the roots are fit for use. Wood ashes sown in the drills or mixed with the surfacing soil serve to quicken growth and to ward off the disfiguring attacks of maggots.

Leeks no one should be without, especially seeing how very hardy and useful they invariably prove. They succeed admirably in Celery-like trenches, but can be grown nearly as large with much less trouble. They cannot well be too large, especially when they are intended to be served up as a vegetable. The ground for them should have been heavily manured, deeply dug, and in good working order, the Leeks being dibbled out when of good strength in rows about 15 inches apart, and about 6 inches, or rather more under favourable circumstances, asunder. The holes may be made from 6 to 8 inches deep and 3 inches in diameter, the plants carefully raised from the seed beds being merely dropped in, having a little soil worked in to cover the roots and receive a watering. No further trouble need be taken with them, and they will continue to grow till well into the winter, blanching naturally.

Spinach is not always to be had in good condition during the winter, and a substitute that can be depended upon would prove a boon to many. Such a substitute we have in the old yet comparatively little known Spinach Beet, and I strongly advise any of my readers who must have Spinach in abundance to give it a trial. Sown at once, in rows 15 inches asunder, and the seedlings thinned to about 9 inches apart, the roots will attain a good size and yield great quantities of Spinach-like leaves throughout an

ordinarily severe winter, and these may be picked and sent in as Spinach without many cooks being able to detect any difference. I have been favoured with an extra good stock of this Beet that has been saved in one district for many years, but the stocks held by well-known seedsmen are also good.

Parsley is often a stumbling-block to gardeners, the majority at different times failing to maintain the necessary constant supply. We always raise a number of plants on a mild hotbed, and these when they have formed a strong tap-root are dibbled out, about 12 inches apart each way, on a well-prepared border. The plants invariably do well, and the Parsley difficulty is obviated. We do not, however, depend solely upon this strong and usually very hardy plantation, but sow seed early on a good patch of ground, and these plants when of good size are forked out and replanted in beds where they can be covered with frames. They are dibbled out about 9 inches apart each way, and usually cover the ground, and are at their best by the time frosty weather sets in. Other beds of Parsley may be similarly protected, but the fine outside leaves generally turn yellow, and are of little service late in the season.

Asparagus, or Buda Kale, is one of the most hardy greens we have, and I ought not to conclude these notes without reference to it. Cottagers', Scotch, including Read's New Hearting, Ragged Jack, and Buckman's Hardy Winter, are all more or less hardy and serviceable, but none of them, in my estimation, approaches the Asparagus Kale for hardiness, productiveness, and quality. There are two forms of it—perhaps more—in cultivation, one having green stems and leaves, and the other dark purple, and I do not think there is much that can be said about one that does not apply equally well to the other. It is not yet too late to sow the seed, but it must be sown Spinach-like where the plants are to remain. We sowed several rows last season between the lines of Runner Beans, thinning the seedlings to about 1 foot apart, and in spite of the unfavourable position they succeeded surprisingly well, and were available till June. They, however, deserve a better position than this, but last season we were hard pushed for room, and, as we endeavour to grow plenty of everything, were bound to try the experiment.—
W. IGGULDEN.

SELECT HARDY AQUATICS.

It is so seldom that we meet with a collection of aquatic plants, or even a selection of them, in private gardens, that a few remarks respecting them might serve as a reminder to those who may be desirous of giving them a trial. They are a neglected group, if we may judge by their absence in places where they might receive every accommodation; their requirements, too, are simple, and the cost for after attention is so trifling as to be scarcely worth naming. Water is in itself a great ornament to the pleasure ground, and is greatly assisted by vegetation of a suitable character, either floating on the surface, or imparting additional charms to the landscape around by occupying isolated and suitable positions on the margin of the lake. Where water plants are met with it not unfrequently happens, and especially so with some few species, that they are in overwhelming quantities; such, for example, as the Polygonums and Potamogetons, which, being abundant in some parts, increase with amazing rapidity in lakes, ponds, or even stagnant pools. It is not, however, to these that I now wish to refer, or that should be employed unless a lake of some twenty acres in extent be in existence, and then a few groups will not be out of place. As there is an almost endless number of plants suitable either for deep or shallow water, I will only in my present note briefly allude to some of the most ornamental.

APONOGETONS.

I cannot do better than allude first to what may justly be considered one of the gems among hardy aquatics—Aponogeton distachyon, or the Cape Pond Weed, which, with its deliciously fragrant and waxy white blossoms, meets with more admirers than do the majority of water-loving plants. It has, moreover, farther claims upon our notice—primarily its usefulness in a cut state, and seeing that its flowers in favourable waters may be had throughout the winter months its value is greatly increased. In no garden of my acquaintance is this plant so easily grown or increases with such rapidity as in the Exotic Nurseries at Tooting, where a large space was, and I believe still is,

devoted to it. There have I witnessed its singularly beautiful fragrant flowers by hundreds floating amidst its abundant foliage. It needs no skill to bring it to the perfection there attained, for the secret of success appears to be with the water itself, which seldom freezes in the most severe weather, the supply coming from an Artesian spring near by—a valuable adjunct in such cases. This plant is suited for deep or shallow water, and may also be grown in pots in the ordinary way, provided they are stood in pans of water. It is tuberous-rooted, and by being washed free of soil and wrapped in damp moss may be sent safely by post any day in the year, and where it grows abundantly it will make a most fitting and useful plant to offer in exchange.

There is also a minor form of this plant less frequently met with, also one known as *A. spathaceum junceum*; the latter, however, is not quite hardy in some waters. Before passing from the Aponogon I may observe that while they are suited to large or small aquariums, either in the greenhouse, conservatory, or open air, they should not be placed in small tanks where dipping is constantly carried on, as this is sure to cause serious injury.

ORONTIUM AQUATICUM.

The Golden Club is a scarce though handsome plant, suited for shallow water, but may be fully immersed when severe frost is expected. The fact of this plant being so rarely met with may be accounted for in a measure by its somewhat slow growth, and it is by no means one of the easiest to increase by division; at least, such is my experience of it. It came into our gardens a century ago from North America, and as it is still only occasionally seen it is quite possible that it never reached our shores in quantity, or that the majority of the earlier importations were lost. One other point I have noticed respecting it is that it does not produce seeds nearly so freely as many other members of *Aroideæ*, to which it belongs, and this also may contribute to its scarceness.

NYMPHÆA ALBA.

For producing a bold striking effect in groups here and there, nothing can compare with *Nymphæa alba*, "the queen of Water Lilies," so well suited for deep waters; it is a true Britisher, and one which we may well be proud of. It is so well known as to stand in little need of either description or recommendation; suffice to say that nothing can adorn the surface of the lake as does this most handsome and noble plant. It is amongst the good and cheap plants, too, and, what is more, may be collected in many parts. It may be well to call the attention of those who may be planting it for the first time to the following simple method of immersing the plants, and for this purpose a round basket or sieve is well suited. Fill with good stiff loam, to which may be added a little manure, fix the long fleshy rhizomes securely in the centre, and then place some stones on the surface of the soil; this will prevent their shifting, otherwise they are liable to float and so become troublesome. When lowering them to their respective positions allow the whole body of soil to become saturated, and then gradually lower them. It is most effective when seen in large groups; still, it should never be allowed to occupy too much space to the impediment of waterfowl or boating, either of which will soon mar their beauty.

N. candidissima is perhaps the finest *Nymphæa* extant, and is still rare; so rare, indeed, that its flowers have been seen by comparatively few. I have never seen it in finer condition than in the Botanic Gardens of Oxford, where it is annually in grand condition. It occupies a large circular tank situate in one of the main walks in these gardens, and at the time of which I speak there were numbers of flowers of enormous size and of the purest white. The collection of aquatics in these gardens is one of the finest (if not the finest) extant, and it is worthy of remark that one and all seem to be possessed of exceptional vigour.

MENYANTHES TRIFOLIATA.

The Buckbean, though by no means rare, is extremely beautiful and chaste in appearance, and very interesting to behold. It should not be overlooked, for it deserves a place even among choice plants. It is abundant in many parts; and being so, it is surprising that it is not more generally employed. The elegance of its flowers will vie with the rarest and choicest plants. The flowers are white and beautifully fringed on the inside with white filaments, the exterior being flushed with deep pink. It is adapted for shallow water, the margin of a stream, or for marshy ground. It may be readily forced, in which state its flowers are pure white and elegant in the extreme.

BUFOMUS UMBELLATUS.

Who has seen and yet failed to admire the Flowering Rush? It is a charming and conspicuous plant, delighting in the rich mud and decayed vegetable matter usually found on the margins of lakes and ponds. It is a native of Britain, and found abundantly in many parts of Europe.

CALTHAS.

The Marsh Marigolds, which are more inclined to be sub-aquatic, must not be omitted. In marshy land or moist meadows *C. palustris* just now is among the most showy of British plants, remarkable alike for its richness of colour and profuse flowering; and among the double-flowered forms we have *C. palustris fl.-pl.* and *C. palustris minor fl.-pl.*, which has the richest coloured flowers; and, lastly, *C. palustris monstrosa fl.-pl.*, which, while fully bearing out its varietal name, is not so good in form as the two previously named. They delight in full sunshine with plenty of moisture beneath them.

SAGITTARIAS.

The next genus to which I shall briefly refer is the *Sagittarias* or Arrowhead, which includes one of the finest of flowering aquatics—*i.e.*, *Sagittaria sagittæfolia fl.-pl.*, its massive spike of flowers reminding one of a double Stock, or, better still, a fine double white spike of *Lychnis viscaria*, though so far as the size of the individual flowers are concerned we cannot draw a closer comparison than the flowers of a double white Balsam. It is, indeed, a handsome plant, does well in pots placed in pans of water, and thus grown it can be removed to the cool conservatory at flowering time. It should have liberal treatment and receive every encouragement. It may be increased by division, though I do not advise this being done too often, for a few good-sized specimens will give greater satisfaction in such cases than do greater numbers of smaller plants.

Villarsia nymphæoides forms pleasing groups of small *Nymphæa*-like leaves and a proportionate number of bright golden yellow flowers, which produce a telling effect on bright sunny days.

Thalia dealbata is a most distinct plant, not generally considered hardy. It should be immersed in sharp weather.

Pontederia cordata, or the Pickerel Weed, is of bold erect habit, producing spikes of blue flowers. This is suited to shallow waters.

Then if we glance for a moment at some of the smaller kinds we find two beautiful examples in the Water Violet, *Hottonia palustris*, and the little white *Ranunculus aquatilis*. These are both native plants, the last-named forming quite sheets of its snowy white flowers. Among the quaint we have the Water Soldier, *Stratiotes aloides*, which may be cast into the water without soil, and will take care of itself; indeed, it does better this way than any other. My first experience with this some years ago taught me the lesson I have not forgotten. A large quantity was potted in the ordinary way. These all succumbed with the exception of a few, which released themselves from the soil and floated on the surface, where they were evidently at home. I potted no more, but have since allowed it to roam.—E. JENKINS.

WATERING VEGETABLES.

THE time has now arrived when this demands attention. In deep cool soils many crops may be grown throughout the whole season without any artificial watering, but where the soil is light, poor, or shallow, some of the most important crops will never prove satisfactory unless they are frequently drenched in hot dry weather. Labour may be saved by not trenching in winter, but the expenditure will go out in another way, and watering will become considerable if it is done properly and the plants receive as much as they ought to. Where pipes are laid all over the garden and hose can be attached to convenient taps, all crops may be readily watered, but where the water has to be carried from a distance in pans or buckets many vegetables often go without any which would otherwise be soaked. Few, for instance, would think of watering a large Carrot or Onion bed if all the water had to be carried to them, and yet if this could be done it would save many crops from being dried injuriously or attacked by the grubs.

Peas pay for watering as much as any crop. When dry at the root they never fill the pods well, and the peas become hard, dry, and flavourless before they have ever attained perfection. The plan of growing summer Peas in trenches is a capital one. The soil must be loosened well down before the trench can be made, and when watering has to be done it is a simple matter to fill the trench with it. It has no means of running away and not reaching the roots, which is often the case on the level. Kidney Beans of all sorts should be thoroughly watered in dry weather. Cauliflowers should never be allowed to droop their leaves for want of it. Lettuces will take any quantity if they are to be cut large and crisp. Ridge Cucumbers, Vegetable Marrows, and Tomatoes enjoy abundance of water, and generally speaking dryness at the roots is a great drawback to all kitchen garden produce.

Some plants may be small and far from maturing their crops, and by this it may be thought they do not require water, or that the absence of it will do them no harm at such an early stage of their growth, but this idea is wrong. If the plants are insuffi-

ciently supplied with moisture when young many of the roots will perish, they will become stunted, and no amount of after watering will bring back their usual or former vigour. Water should be applied to maintain their full strength, not to renew it after a great loss has occurred. Of liquid manure for vegetables we cannot speak too highly, and dissolved artificial manures, as well as drainings from all kinds of manure heaps, may be used copiously. Spreading on the manure around the plants or along the sides of the rows, and then watering on the top of it to wash the fertilising properties down to the roots, is a practice which cannot be too strongly recommended. — A KITCHEN GARDENER.

THE HISTORY OF THE CHRYSANTHEMUM.

(Continued from page 502.)

THE variety last alluded to was totally dissimilar in every respect from its predecessor of 1764, for it was one of the large-flowering kinds. The credit of this was due to a Mons. Blanchard, a merchant of Marseilles, who in the year 1789 imported three plants from China, the white, purple, and violet, but out of these three only one, the purple, reached France alive. This is the one of which Monsieur Ramatuelle published an account and description in the work previously quoted. He at first supposed it to be a double *C. indicum*, but in his memoir he called it *Anthemis grandiflora*, having satisfied himself and the French botanists that it could not be the *C. indicum* of Linnæus. This supposition was no doubt occasioned by the resemblance of the foliage.

In the following year several plants of this purple Chrysanthemum were sent by Mons. Cels, a Parisian nurseryman of considerable repute, to the Royal Gardens at Kew, and was the first large-flowering Chrysanthemum in modern times known either here or on the Continent. In November, 1795, it bloomed at the nursery of Messrs. Colville in the King's Road, Chelsea, a firm much celebrated for the beauty of their Chrysanthemum exhibitions in after years.

When Curtis, in the "Botanical Magazine," pl. 327, figured and described the same plant in England, he, without making reference to the account of Mons. Ramatuelle, probably because the war between France and England prevented his acquaintance with it, called it *C. indicum*, and by this name the Chinese Chrysanthemum was popularly known for many years by the English people.

For the first few decades of the present century there was scarcely any other plant half so popular as the Chinese Chrysanthemum, and as it had then attracted considerable attention as a florists' flower it began to sell for a high price. Messrs. Colville, who were the first successful growers to bloom the purple Chrysanthemum, which, it may easily be imagined, bore but little resemblance to those we now see in the most insignificant collections, were, with one or two other florists, the cause of the great celebrity which it soon acquired. There was no addition to this variety (also known as the old red, the old purple, and the quilled purple) for several years, until 1798, when between that year and 1808 eight new sorts were imported—one by Mr. Thos. Evans of Stepney, and the remaining seven by Sir Abraham Hume. To these nine varieties a tenth was added—viz., the changeable white, a sport from the old purple in 1802. Between 1808 and 1816 there was another interval, but in the latter year and up to 1823 there were seventeen new ones brought over.

The interest of the zealous gardeners of England having been now excited, they were induced to continue the further introduction of additional sorts, and besides the two gentlemen already named, Mr. John Reeves, a tea buyer for the East India Co., was one of the most active men in enlarging the list.

These and the previous importations took place in the years following. In 1798, the rose and buff. 1802, the golden yellow, the quilled yellow, and the sulphur yellow. 1806, the Spanish brown. 1803, the quilled white and the large lilac; of these the sulphur yellow was the one imported for Mr. T. Evans, and the other seven were those imported at the instance of Sir A. Hume. 1816, the tasselled white for Thos. Palmer, Esq., of Bromley; this first flowered in 1818. 1817, the superb white, which first bloomed in the garden of Messrs. Barr & Brooks of Ball's Pond, in 1818. 1819, In May of this year these gentlemen, who were subsequently cultivators of no little merit, imported three varieties, and in the month of August three new plants reached the gardens of the London Horticultural Society. Out of the first three, one proved to be the tasselled white, the second was called the quilled salmon-coloured, and the third was named the small yellow single Chrysanthemum, and was concluded to be a variety of the plant described by Linnæus as the *C. indicum*.

Those belonging to the Society were first, the quilled flamed yellow, a variety much after the style of a modern Japanese, the second a replica of the superb white, and the third the quilled pink, erroneously said by Mr. Salter to have been introduced seventeen years before. It will be seen that, although six sorts were

introduced this year, only four were really new. In the month of June, 1820, twelve kinds sent over by Mr. Reeves, who acted as correspondent of the Horticultural Society at Canton, arrived with the loss of only a single plant, so that the next year opened with a good prospect of an increased stock for those whose anxiety had been the cause of their advent. In the autumn of the same year twelve varieties, all that were then known in this country as having had their flowers and habits ascertained, were cultivated in the gardens of the Horticultural Society.

Towards the close of 1821 the Society received two more sorts—viz., the small yellow Chrysanthemum (supposed to be a sport from the sulphur yellow), which did not bloom till the following season, and of which no account as to its introduction to this country could be discovered, and the paper white Chrysanthemum, first observed in flower by Mrs. Marryatt and her son in Covent Garden, who purchased it and gave it to the Society.

Of the surviving varieties dispatched to this country by Mr. Reeves in 1820 eight blossomed satisfactorily about this time, and were named—the early crimson, large quilled orange, expanded light purple, quilled light purple, curled lilac, superb clustered yellow, semi-double quilled pink, semi-double quilled white; while the remaining three, which did not flower until the season of 1822, were the semi-double quilled orange, large pale purple (subsequently known as the late pale purple), and the eleventh turned out to be a duplicate of the quilled pink.

The endeavours of the Horticultural Society, hitherto aided by the friendly exertions of Mr. Reeves and the obliging attentions of the commanders of the China ships, were destined to receive a severe check in the year 1822. An assortment of forty varieties corresponding to the drawings of some Chinese Chrysanthemums made by a native artist for the Society had been diligently made by Mr. John Potts, a gardener in their service, who went to China in 1821, but the whole were unfortunately lost on their way home. In 1823 Mr. J. D. Parks was sent to China with instructions to collect, among other rarities, as many good varieties of Chrysanthemums as possible, and he despatched a part of his collection in the spring of the following year, bringing with him the others on his return. Altogether his collection numbered twenty varieties, only four of which proved to be varieties already known.

At the beginning of 1824 there were twenty-seven well-known sorts which had been thoroughly tested and approved of, thirteen of which had been represented in different botanical works. Mr. Reeves returned to England this year, bringing with him several plants, of which two were new kinds. Capt. Mayne also in this year brought a collection of Chinese Chrysanthemums home, which he presented to the Duchess of Dorset, but there were but one or two new sorts. In 1826 the Horticultural Society's collection comprised forty-eight distinct kinds. Of these, four were sports, which originated in England; two, the origin of which was unknown; and the others imported, as already mentioned. The novelties described in this year were:—The pale pink, a sport from the rose in 1822; early blush, imported by Mr. Parks and Capt. Mayne; Parks' small yellow, by Mr. Parks in 1824; blush *Ranunculus*-flowered, by Mr. Parks in 1824; tasselled yellow, by Mr. Parks in 1824; changeable pale buff, by Mr. Parks in 1824; curled blush, a sport from the curled lilac; tasselled lilac, imported by Mr. Parks in 1824; two-coloured red, imported by Mr. Parks in 1824; pale buff, imported by Mr. Reeves in 1824; Windsor small yellow, origin not known; clustered pink, imported by Captain Mayne in 1824; semi-double quilled pale orange, starry purple, golden lotus-flowered, brown purple, two-coloured incurved, late quilled yellow, Yellow Warata'h (all imported by Mr. Parks in 1824)—a variety entirely different from all the others, and supposed to be the precursor of the large-flowering *Anemone* section; the double yellow Indian Chrysanthemum, the flower of which did not exceed $1\frac{1}{2}$ inch in diameter; and the double white Indian Chrysanthemum, with flowers not more than 1 inch across. These last two sorts were also in Mr. Parks' collection, and were considered at the time to be double varieties of the *C. indicum*.

Up to this date we find a total of eighteen sorts had been engraved in works like the "Botanical Magazine," the "Botanical Register," "Sweet's British Flower Garden," &c.; but, with the exception of the tasselled yellow, not one of these old kinds are now in existence, having gradually disappeared as the newer and more improved varieties were sent out.

Mr. Donald Munro, the gardener to the Horticultural Society, some few years later gives a list of forty-nine distinct sorts of the Chinese Chrysanthemum, enumerating all the varieties to which allusion has already been made. Besides giving some cultural and other information he divides the Chrysanthemum into four classes in the following manner:—

- | | | |
|----------|-------------------------|---------------------------------------|
| Class 1, | flowers large or showy, | requiring protection. |
| " 2 | " | quite hardy. |
| " 3 | " | but produced sparingly. |
| " 4 | " | small or late, not worth cultivation. |

In the last class are placed the two small Indian Chrysanthemums, and for many years after we hear nothing more of this small-flowering species.

There is no necessity to point out that up to this period the Chrysanthemum bore no specific name, but was distinguished either by its form or colour, and a great deal of uncertainty was felt as to possibility of giving the varieties the real Chinese names with any expectation of being correct. Many of these names were curious and fanciful, and it was considered if they could have been adopted they might have afforded a variation in the nomenclature of those days as well as relieve the florists from some perplexity in giving names derived from the colours of blooms, a difficulty which they all agreed would greatly increase upon them as the number of their collections increased.—C. HARMAN PAYNE.

(To be continued.)

THE GARDENER'S PORTABLE FRAME.

AMONGST the numerous exhibits of well-constructed frames and houses at the Bath and West of England Show, Brighton, recently, much attention was attracted to the portable frames shown by Messrs. Wright & Holmes, 333, Moseley Road, Birmingham, of which an illustration is given in fig. 125. They possess several important advantages, one of the most important being the readiness with which the lights can be turned back to admit of any necessary operations being performed without the trouble of pulling them off or of propping them up. Each frame has two glass ends. They are well ventilated; air is admitted at two different levels through the patent iron ventilators at the bottom—

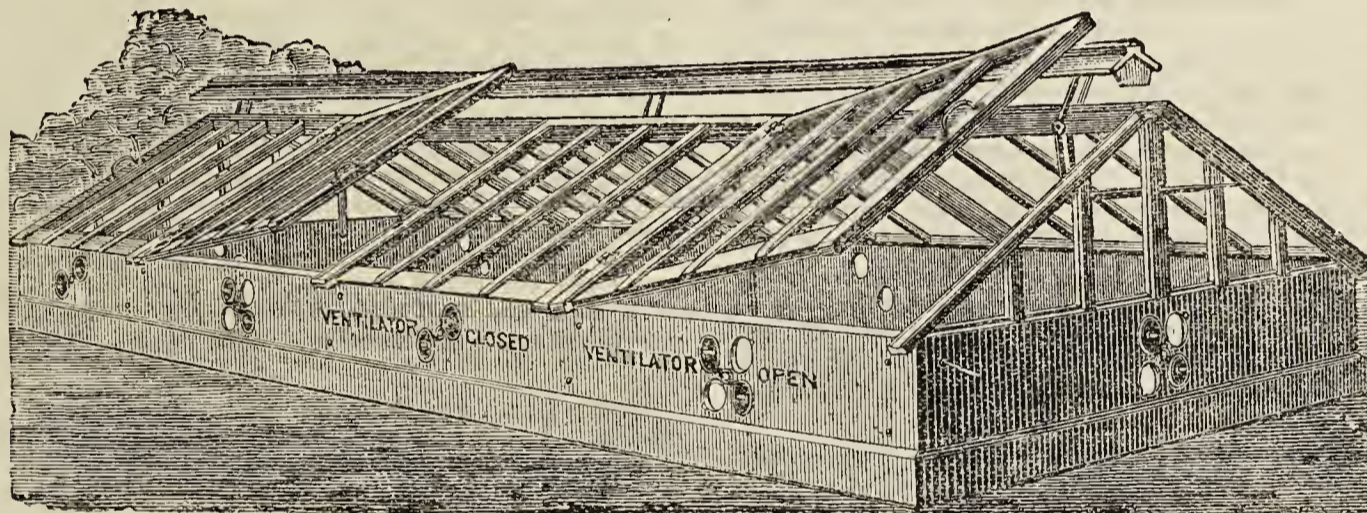


Fig. 125.—THE GARDENER'S PORTABLE FRAME.

the ridge lifts the whole length to any required height by simultaneous action—the main rafters are of iron, to which the woodwork at bottom is bolted, and the lights are constructed so that they can be taken off if necessary; each light is strengthened by an iron rod, which is fixed at an angle of 45°, this makes it strong and rigid; the glass is fixed in the watertight channelled bars with copper screws. The latter is very simple, and renders the removal or insertion of glass a quick and easy process.

CAULIFLOWERS.

THESE are very numerous. In one seed list of 1885 now before me I can see eighteen names, and in many other lists the numbers are not much less. There are early, second early, and late. They are not divided into seasons like Broccoli, but they might be, as they are numerous enough. There is no variety I know which has not been tried in our garden, but many will not be grown again. At one time, not many years ago, Early London was the only early Cauliflower offered, but now it is hardly ever seen, and I do not think cultivators need be sorry for this, as it has been superseded in all its good points. In earliness it is inferior, and in quality it has several equals. Of early varieties, or "extra earlys," as they are termed, there are numbers; indeed too many, as some of those which possess a name have no other merit to recommend them.

I place Veitch's Extra Early at the top of the list of early sorts. Snowball has never been anything different with me than an inferior "Extra Early," and I would make no distinction between it and others of this type which do not deserve special distinction. Veitch's Pearl is a second early of great merit. It does not produce such large heads as Webb's Early Mammoth, and I would include the last named in all lists where good Cauliflowers were wanted in June and July. Sutton's King of the Cauliflowers is a first-rate summer variety; I prefer it to Eclipse, and would recommend it to be grown to precede Veitch's Autumn Giant. It is worth noting that Messrs. Veitch have introduced the best early and

best late Cauliflowers in cultivation. As a late sort there is none to equal, far less excel, the Autumn Giant. No finer autumn Cauliflower could be desired than this. Walcheren has ceased to find a place in our garden for some years. I consider it next to useless, as the heads seldom form compactly, and it is poor in every way when compared with the preceding. I do not now devote the attention to sowing Cauliflowers in autumn I once did, as by sowing a little seed of those new early ones in a gentle heat in early spring they head sooner than the autumn plants, and give much finer produce.—A KITCHEN GARDENER.

IN THE GARDEN.

THE SCARLET WINDFLOWER—*Anemone fulgens* is almost too well known to figure in these notes, but its merits as a garden flower are great, for what else now in flower outside equals it in every respect?—brilliancy of colour, habit, freeness of flowering, and general adaptability to most positions, except absolute shade, which, as far as my experience teaches, it dislikes. A rich sandy loam, or, indeed, a rather heavy loam, suits it admirably, with a good supply of well-bodied manure. It is almost useless to attempt its culture without the latter, and where it occupies the same position year after year a good top dressing of manure should be afforded. Within the last few years it has become very popular, and to meet the demand enormous quantities have been collected, and are offered to the public at a very low price; but of such beware. Rather pay three times the price for selected home-grown roots, for you may get the varieties of little value through no fault on the part of the dealer, for no plant is more variable in its native home than this. Yet this variability is restricted in one sense, for the only

colour that I know of is scarlet of some shade. Many of the flowers come semi-double, a mixture of green bracts and scarlet segments, which is by no means attractive. The double *A. fulgens*, as it is called, produces flowers of this character. A noted Parisian firm speaks highly of it, saying it resembles the type in all respects except the duplication, but after repeated trials I shall give it up, as all the flowers come a mixture of green and red.

THE SNOWFLAKE ANEMONE.—*A. sylvestris* is a very chaste and pretty species, flowering freely when established in a moist position. It enjoys a light rich soil, with a good proportion of leaf soil worked in, and the position it occupies should be clear of the mid-day sun, when the flowers will last much longer. It does well in the wood or wild garden, quickly forming a large colony, when it is quite attractive. The blossoms are extremely pretty in vases, and last well in water. It was introduced from Germany at a very early period, for good old John Parkinson calls it in his "Paradisus," page 202, "the white wild broad-leaved Windflower," and describes it very accurately. Curtis gave a good figure of it in the second volume of the "Botanical Magazine," pl. 54.

THE VERNAL ANEMONE.—*A. vernalis* is of a very different character, closely resembling the "Pasqueflower" (*A. pulsatilla*), and was formerly included with that and other species under a distinct genus named *Pulsatilla*, which is now, however, only regarded as a section of *Anemone*. The Vernal Windflower is an alpine gem of the first rank, and should find a home on every rockery. It forms dense little tufts of divided leaves, silky when young, becoming nearly smooth with age, from which are sent up dwarf solitary flowers on stout silky stalks 3 to

4 inches high. The sepals are light bluish-purple outside and white within, the outside thickly clothed with long silky hairs. A good figure is given in Sweet's "British Flower Garden," pl. 205. It requires a well-drained position with very sandy loam; a deep cleft is just the position for it, as it occurs in deep crannies under natural conditions. Other congeners of this species, and all of which thrive under similar conditions, and are well worth the attention of those who grow alpines, are *A. Pulsatilla*, *Halleri*, and *patens*; the last is a very fine but comparatively rare form, with large deep purple flowers, usually appearing rather later than this (June 4th).

A STRANGELY NAMED ONION (*Allium Ostrowskianum*), but a very handsome one, indeed I know of no other I like better. I have had it now three seasons, I think from the New Plant and Bulb Company of Colchester. It is planted in a border facing the west, rather dry, as it is well drained both artificially and naturally. One bulb has developed into four, each of which has a stout scape supporting a good umbel of flowers, but owing to the recent very dry weather they are not more than 6 inches high; other seasons the scape was nearly 12 inches in height. There are several flowers on the umbel, each about three-quarters of an inch across, of a clear magenta pink colour, and stoutish substance, looking extremely pretty. I believe it is a native of Turkestan, and is one of Dr Regel's many introductions from that part of the world.

The Italian species, *A. neapolitanum*, is also very pretty, now in full blossom. I have about 200 bulbs, many of which are flowering, but it does not do its best until well established. Some say imported bulbs will not flower, or, indeed, scarcely grow the first season, but to me that appears mere nonsense, as I have repeatedly tried such bulbs. A hundred were planted in November, and many of them are now in flower. Those not blooming I imagine were too weak to do so. The pretty pure white flowers from good strong bulbs are nearly or quite an inch across, each umbel carrying a large number, and they last a long time in a cut state, and prove most useful for all kinds of floral work. Unlike most of the family, we get no disagreeable odour from them, as in the bright *A. Moly* for instance. It is the flowers of this which are imported in such enormous quantities to our market from the south of France early in the year. An excellent figure of it is given in Sweet's "British Flower Garden," pl. 201. It has also been named *A. album* and *A. lacteum*. Its culture is of the easiest, provided a well-drained warmed border is selected, well raised, with light rich sandy soil. The bulb should be put in a good depth, say 6 inches, when there will be no fear of frost.

HYBRID COLUMBINES.—These are so beautiful that the wonder is we do not see them in every good garden. Graceful in form, most easily grown, and with such a diversification in colouring, most exquisite tints, combined or in contrast, yet if a good strain is secured. I have to thank the Rev. Wolley Dod for mine, and although few in number, they are a source of great interest and pleasure. I believe that gentleman has been rather busy for some years selecting and trying to improve these beautiful hardy flowers. The bees, no doubt, have assisted him materially, at the same time great patience and constant selection are necessary to maintain such a good strain, as Columbines rapidly degenerate. Several of the so-called species of Columbines are good, such as *A. chrysantha*, *cœrulea*, *californica*, *Skinneri*, one of the best, &c., but I am sure a good selection of hybrids will give the best general satisfaction.—T.

THOUGHTS ON CURRENT TOPICS.

AS I perceive I write too much for Mr. Iggulden, I will give him a week's grace, perhaps more. This will afford him time to get the opinion and help of his neighbour, Mr. William Taylor, and if he can do this without flattering him so much the better; also if he can whip round and secure the support of other of his gardening friends, I shall be well pleased. I particularly wish Mr. Taylor would throw in his whole weight against the "endosmose theory," and argue the point on behalf of my doughty assailant. We should then have something a little more precise, as it is not easy to follow a line of argument in which some half-dozen "primary" causes are adduced as having one and the same effect. I will only say further now in reference to another of my critic's assertions—namely, "No one can afford to experiment with a house of Grapes," that he will very likely find he has made another mistake. Scientific men "afford" a great deal in the acquirement of knowledge, and I hardly feel myself competent to sneer at them for doing so. Mr. Iggulden's letter on page 498, I should remark, is not in the slightest manner disagreeable to me, but quite the reverse; and now, as he is fond of finding associates in the animal world to strengthen him in discussing a subject pertaining to fruit, I must leave him for a little while to make himself as contented as he can amongst his "aristocrats, frogs, and washerwomen."

I HAVE been observing with interest of late the progress of some *Liliums* in relation to the production and purpose of stem roots. In one particular clump four bulbs of equal size were planted in January, each of them alike bristling with proper roots, as incited by cocoa-nut fibre. For a long time the four plants were exactly alike, and there was no measurable difference in the height of them. Eventually one of them lagged behind until the others headed it by 5 inches, and this plant alone is now producing roots from the stem. By some cause, not ascertainable, it received a check, while the others continued growing uninterruptedly; therefore it seems that stem roots were necessary in the case of one plant, and it produced them, but adventitious roots have not yet been required for the adequate support of the other three, hence there are none. I feel convinced if the stem roots were cut off this particular plant that its growth would be less free. So they will be left on, and the bulbs will be carefully examined in due time. Had two plants fortunately been checked and rooted from the stems, one of them would have been divested of the supernumerary feeders. At present I conclude the safe course is to nourish the stem roots when they form, and the plants will be benefited, whatever the effect may be on the future bulbs.

I AM now going to indulge in a brief reflection on a subject that has not appeared in the Journal; it is a very "current topic," nevertheless, as it relates to a little calamity that has happened to some *Roses* under my control, and may be worth recording. Ten days ago the foliage of these *Roses* was fresh, clean, and satisfactory, and the buds were swelling freely: now nine-tenths of the plants are scorched, the leaves rusted, and the buds hard. Nothing but pure water had been used as an insecticide. The injury, then, was not done by any noxious application. It was done by the sun acting on the leaves suddenly and powerfully when wet. All the plants exposed to the full sun are seriously scorched, those partially shaded less scorched, those quite shaded perfectly fresh. After several hours of rain the sun suddenly cleared at midday, hence the injury. In order to test the matter I was profane enough last Sunday (after church) to sprinkle a number of trees and keep them wet from one till two o'clock after noon, and now there is scarcely a clean healthy leaf to be found on them. They are scorched, rusted, worthless, and the flower buds must be picked off. The day was bright and hot, hence the injury. We cannot prevent the showers falling, but we can do without syringing *Roses* late in the morning of a hot day, and that is why this little mishap and experiment is mentioned. Whether the injury was done by the sun heating the water on the leaves to scalding point; whether the evaporation of the moisture was so great as to extract the heat from them, causing a severe chill; whether the injury resulted from an expansion of moisture in the cells by heat; or whether it was "endosmotic" in its nature, I will leave our practical friend Mr. Iggulden to determine; he knows most things, and shall have the honour of solving the problem. I have only to say the case is stated with exactitude.

JUST as I am writing, a postcard reaches me from some kind friend, who did not seem to have room for his name and address; but that is of no consequence, the matter is everything, and has amused me. It is to the effect that I am not to take too much notice of Mr. Iggulden, who is only "drawing you out a bit." That, I may remind my informant, is the object of most critics, and if anything good can be drawn out of a discussion I do not suppose anyone sharing in it will object to a little opposition being offered to his own views; if he does he should not enter the literary arena.

To resume. I was thinking about *Roses*, and am pleased to observe the miniature *Roses*—varieties, I think, of *Rosa polyantha*—have at last received the prominence they merit. When well grown in 5-inch and 6-inch pots, with fresh clean foliage and clustered with diminutive flowers, it is questionable if there are any plants more charming for decorative purposes in summer; and those cultivators who "go in" for winning prizes in groups arranged for effect might do worse than try their hands at growing these pretty varieties in the manner described by Mr. Bardney on page 480. He omitted, however, to name one variety that should be included—*Anna Maria Montravel*, which has pure white, imbricated, smooth-petalled flowers, and is particularly attractive; so much so, that if I were condemned to grow only one of these miniatures I think that would be the variety, and if your correspondent does not possess it he had better procure it at once.

THE advocates of cutting down *Dendrobiums* appear to have had the best of the argument on that subject recently. It certainly seems very unreasonable that a successful grower should be expected to drag his plants "scores of miles" to some exhibition to convince sceptics, yet Mr. Prinsep appears to have been tempted to do so, and has triumphed, for a cultural commendation would presumably not have been granted for a plant that was not meritorious, and the photographic illustration that has been published shows that his specimen was unusually fine. I have had to cut flowering growths of these plants "very much against the grain," but must confess that better pseudo-bulbs followed than I expected, except from late-flowering and not very strong examples. It seems to me that we must have constitutional vigour, with plenty of time and plenty of heat, for the production and maturation of growths when the pruning system is adopted. Mr. Prinsep obligingly says he will be glad to give particulars of his method of treating his plants if any readers would be interested by the record of his experience. I, for one, shall be pleased if he will do so, and his notes can hardly fail to be acceptable to

many readers, whether they are predisposed in favour of the system he adopts or not. At any rate it is to be hoped we have heard the last of the clamour for taking plants to London for the convenience of individuals who will not believe anything can be done that they have not accomplished themselves, and will not take the trouble of doing what they expect others to do—undertake a journey for verification, and especially when this can be done without dragging plants about with them.

It would appear to be a tenet in the horticultural creed of some individuals, that nothing can be good that is not "taken to London." Everything must go "to London" to get stamped. But London is not all the world, and according to accounts there is a good deal of produce staged at the London shows that would be as well at home; but if anyone has anything extra good and wants others to know it, he cannot do better than take it to the city of "publicity." I have been to London a few times, and have formed an opinion that gardening around it is no better than may be seen in many other places a few hundred miles away, and decidedly the best examples of culture are to be seen in the nurseries and market gardens.

IN a brief note referring to Ranunculuses on page 504 it is observed, "It is surprising these handsome flowers are now so seldom seen in gardens." It is indeed surprising. I have grown them for many years, and should not like to be without them. This year, though Crocuses, Narcissuses, Hyacinths, and Tulips have been as good as could be desired, they have been far surpassed in beauty by the Ranunculuses that succeeded them. In symmetry the blooms equal the best formed Camellias, while in variety, and especially richness of colour, they far excel either Camellias or Roses, and in this respect are scarcely surpassed by any other flowers that are cultivated either under glass or in the open air. It is, I think, a great pity that Turban Ranunculuses are so "seldom seen."

INQUIRY, I perceive, has been made on that very interesting, singular, and chastely attractive race of plants—British Orchids, and the reply given on page 517 is suggestive, as it indicated that these plants are amenable to improvement. I happen to have some of them flowering now, and they are much stronger and altogether more attractive than they were when struggling through the grass and existing in the hard dry soil in their native haunts. They were transplanted when the flowers were fading, the stems being cut off, in fertile soil in a position shaded from the sun after ten o'clock, and it suits them exactly. They are much admired, and I am strongly impressed with the idea that there is a great deal of latent beauty in British Orchids that is worthy of being developed by cultivation. The present is the time for transplanting.

FOR the study of young gardeners especially the article on methods of potting on page 508 last week, is, in my opinion, far away the best in the Journal, and especially the closing paragraphs of it relating to watering. That article should be read attentively and thoughtfully by all who desire to excel in plant culture. I do not mind saying that when fourteen years of age I not only read over and over again articles on gardening that I was fortunate enough to get hold of, but made it a rule to copy those that I wished to firmly impress on my memory. That practice was continued for fifteen years, not in a slovenly slipshod way, but carefully, with the object of finishing each chapter better than the last. This is mentioned solely with the object of encouraging those young men who may be disposed to do so to adopt some such method of utilising a few spare hours. First let them read carefully, discriminate, then fix on their minds by transcribing. They will find the benefit of it sooner or later, educationally and professionally. Eventually they will be impelled to take a step in advance. They will no longer be content to copy, nor will it be needful to do so; but a desire will become fixed to do a little good to others in return for that which they have received, and the practice they have indulged in will be of the greatest advantage in enabling them to gain a hearing through the press in the great auditory of the horticultural world. This "thought" for the young will be excused by the old; and all, perhaps, will be glad if a little rest can be enjoyed by—A THINKER.

SCOTTISH PANSY SOCIETY.

THE forty-first annual Exhibition of this Society was held on the 16th inst. in the west portion of the Waverley Market, Edinburgh. Owing perhaps to the excessive drought which has prevailed in the south-east of the country the Show was not such a large one as we have seen, while many of the blooms lacked that freshness which is so much appreciated in these flowers. A few large foliage plants served to make the bare concrete less dreary; but otherwise, if we except a stand of cut Pyrethrums from Messrs. R. B. Laird & Sons, Pansies and Violas reigned supreme for the day.

In the nurserymen's classes the chief prizes went to the west of Scotland, the rather humid atmosphere there telling in favour of the Pansy as later on it does with the Gladiolus. Mr. Sutherland, Lenzie, carried off first prize both for twenty-four Show and twenty-four Fancy Pansies. Some of the flowers of the latter were especially fine. Mr. Lister, Rothesay, was second in both cases, and Messrs. Dickson & Co., Edinburgh, third. The finer of the Fancy sorts were May Tate, Pilrig, Maggie Edgar, Mr. G. P. Frame, W. McIntosh, Mrs. O. Duncan, W. Dean, Evelyn Bruce, Miss Bliss, A. Baillie, Thalia, Ruby, Mrs. E. H. Wood.

For twenty-four bedding Violas Messrs. R. B. Laird & Sons, Edinburgh, were first, and Messrs. Dickson & Co. second. The best varieties in the stands were Pantaloon, Countess of Kintore, Queen of Crimson, Columbine, Mrs. Cowan, Countess of Hopetown (pure white), Rufus, Glow, Lady Kirk (yellow), Acme, and Mrs. Cobham, Bride (pure white with orange eye).

Messrs. Dickson & Co. were the only exhibitors of seedling Show Pansies and received the first prize for these.

In the gardeners' class Mr. Borrowman, Beeslack, was first for eighteen Show Pansies; Mr. J. Buchanan, Campsie, second. For twelve blooms Mr. Borrowman was again first, and Mr. Stewart, Lenzie, second. For eighteen Fancies Mr. Stewart was first with a very fine lot, Mr. Borrowman second with slightly smaller but rather cleaner and fresher blooms, and Mr. McComb a close third. For twelve Fancies Mr. Stewart was again first, Mr. McComb second. Mr. Stewart was also first for six blooms. For twelve bunches bedding Violas Mr. J. Baxter was first and Mr. Borrowman second. Murcheston Castle, a smallish flower, maroon crimson edged with white, is a pretty thing shown in the first lot.

In the classes devoted to amateurs Mr. J. S. Ritchie, for eighteen Show blooms, was first with a clean good lot; Mr. J. Skinner second, and Mr. Stewart third. For twelve Mr. J. S. Armstrong was first and Mr. J. Galloway second. For six blooms Mr. Stewart showed six excellent flowers; Mr. Black, East Calder, being second. For eighteen Fancies Mr. Black occupied first place with a good lot of bloom, large, even, fresh, and bright; Mr. Stewart was a good second, and Mr. W. Dick third. Mr. Stewart for twelve blooms was first, the second place being taken by Mr. Black, the blooms fine in both cases. Mr. Dick took first for six blooms, and Mr. Black second.

Prizes were offered for the best single blooms in the various sections. For a yellow self, Mr. Borrowman was first with William Crocket; for a blue self, Mr. Irwin, Tighnabruich, with Abbotsford; for a white ground, Mr. W. Deck, with Jessie Foote; for a dark self, Mr. J. S. Ritchie, with James Morrison. The other classes of these were not filled.

A large number of special prizes were offered, and these brought a good competition. Mr. Laird offered prizes for twelve Show and twelve Fancy Pansies, the prizes being taken by Mr. Borrowman, Mr. Stewart, and Mr. Storie in the order named, each showing good blooms. Ballie Goodwin, a veteran Pansy grower, offered a prize for six Show and six Fancies, Mr. M. Stewart taking the prizes. Among many others Messrs. Dickson & Co. took the prize for three Fancy Pansies—Pilrig, a fine variety. The same firm was also first for three blooms of James Greive, another fine variety. For Fancy, Louie, another fine sort, Mr. W. Water was first. Mr. Sutherland, Lenzie, was first for eighteen seedling Fancy Pansies, but no names were given with these.

Prizes were as usual offered to lady members for various forms of cut flowers decoration, Pansies or Violas alone being allowed. The majority of the arrangements were rather heavy, the best being a basket of Fancy Pansies. Six small glasses of bedding Violas and a basket of bedding Violas, each from Mrs. Laird, Pinkhill. Miss Laird and Miss Du Plessis had also each prettily arranged baskets.

First-class certificates were awarded as follows:—Mr. J. Hampton for Fancy, Miss Darling; Mr. W. Dick for Show, Miss Brooks; Mr. J. Black for Fancy, James Craig; Messrs. Dickson & Co. for Fancy, Miss Greive; Mr. Thomson for yellow self, Maggie Thomson; Messrs. Dobbie & Co., Rothesay, Mrs. Lyle; white Fancy, commended Mrs. Maxwell.

Before closing this short report we should like to protest against the rule that allows competitors for the prizes to stage blooms without at the same time attaching names. The policy is in more respects than one a bad one, for it can hardly be expected that people will support a Society whose efforts from an educational point of view are, to say the least, of little value.

LETTUCES ON CELERY RIDGES.

MANY say the best summer Lettuces can only be grown in cool soil and a partially shaded position, but for some years past I have cut all our finest Lettuces from the tops of the ridges which stand up high and dry between the Celery trenches. Last year I cultivated over a dozen varieties, with the intention of exhibiting them at South Kensington, and managed to show as many as twelve sorts in one collection; but although some of them were grown on level rich ground, the Celery-ridge ones were decidedly the best. Manure is applied to the Celery trenches heavily, but nothing extra goes on the ridges, and I can only attribute the success of the Lettuces to the great depth of soil they have there. Indeed, this is the only advantage they have, as it is a difficult matter to water them properly on the ridge, and they have only the deep soil to depend on. It is a very common practice to plant Lettuces on ridges at this time; and as many readers may be able to inspect their own produce in this position, let me ask them to look and consider if it would not be advisable to grow more Lettuces on ridges. Late autumn and winter Lettuce generally grow very well; but they frequently suffer very much from damp, and the little experiment I have made in this way leads me to say that our autumn and winter Lettuces would develop more and keep much longer on small ridges thrown up for the purpose than they do on the level.—J. MUIR.

THE STEM ROOTS OF LILIES.

MR. E. JENKINS settles the various points raised on this subject to his own satisfaction at least, and evidently gives to others but little credit for their practice and observation. There are others besides himself who have the management of these bulbs in quantity after they arrive in this country. I have had the handling of large quantities of these bulbs, and laid them into cocoa-nut fibre, sawdust, and other similar material after their arrival until they have been sold or finally planted. Experience justifies me in taking exception to the statement that 95 per cent. commence root-action first from the base. With the experience your correspondent professes to have had he ought to know that hundreds and thousands are annually imported that never form basal roots at all. First we are led to believe that 95 per cent. do well, and then that many fail, for Mr. Jenkins remarks, "The cause of many bulbs failing to make either much root or produce flowers, is due to the fact that they are lifted in an immature state." How are the two statements to be reconciled? I

should be satisfied, and so would hundreds of growers, if the percentage of failure with imported roots could be reduced to such a limited number. If the experience of the majority of growers was recorded I am afraid it would tell materially against your correspondent, and considerably reduce the large percentage of those that do well, while the number of those that form no roots would be increased. I have invariably found that the bulbs that start freely from the base and display every sign of activity below generally do well, while the quantity of stem roots are very few in comparison to those that are sluggish below.

Your correspondent is evidently hasty in his conclusions, and does not even attempt to confute by arguments of fact that which he terms "mere fiction." Instead of proving that the surface roots are natural and not the result of sluggish root-activity below, he tries to draw an analogy between Liliiums and Primulas. What similarity is there existing between these two plants? It is a wonder I was not directed to the Vine, for there is a greater analogy between the Vine and the stem of *L. auratum*. Annually roots are produced from the stems of thousands of Vines, and what would be thought of the men who encouraged and supplied these roots with suitable food for the purpose of supporting the Vine or crop? Would this not be practised at the expense of the basal roots? If this is a fact in the case of the Vine why does it not apply with equal force to *L. auratum*? if not, it is for your correspondent to prove the reverse before concluding that statements are "fiction."—SCIENTIA.

THE RED ROSE BOILER.

IN a recent visit to the vineries at Chester-le-Street I was forcibly struck with the efficiency of the new boiler, named "The Red Rose," invented and now being sent out by the proprietor, Mr. Joseph Wither- spoon. Without a doubt it possesses, what the inventor justly claims for it, great heating power. Being a very bright day the fire had not been started, and to prove the rapidity with which the heat could be raised I tried the flow pipe close to the boiler in the vinery, which was then scarcely warm. We then watched the fire started, taking particular note of the time, and in ten minutes the pipe was too hot to comfortably keep my hand upon it, and this with an ordinary sample of small coal. Not the least pleasing feature was the Gros Colman and Madresfield Court Vines immediately over the boiler carrying a beautiful crop, and with foliage as clean and fresh as could be desired.—W. J.

CHOICE RHODODENDRONS.

THE following selection of varieties, grouped under their prevailing colours, has been made with great care from Mr. McIntosh's collection at Dunevan, and we publish it for the information of those of our readers who may contemplate planting a good assortment of these handsome evergreen shrubs.

White, with shades of blush and cream.—Album elegans, white, free good habit; Album grandiflorum, large and good; Album triumphans, fine; Chianoides, white, pale yellow spot; Exquisite, good white, large yellow spot; Empress Eugenie, white, carmine spot; Gloriosum, white, bold flower; Ingrams, pale blush, yellow spot; Lady Annette de Trafford, cream, chocolate blotch; Lady Grenville, blush, with bluish purple margin; Mrs. John Clutton, white, good shape; Mad. Carvalho, white, greenish spot; Minnie, blush, orange spot; Mrs. Russell Sturgis, white, chocolate spot; Perfection (Standish's), pale blush, ochre spot; Picturatum, delicate blush, maroon spot; Purity, good white, orange spot; Sappho, white, conspicuous maroon spot; The Queen (Noble), white, fine and large.

Purple, with shades of lavender, lilac, plum, and puce.—Cyaneum, purplish lilac; Fastuosum, fl.-pl., lavender; Hamlet, purple; James Nasmyth, rosy lilac, with maroon; King of the Purples, bluish purple; Mrs. G. H. W. Heneage, rose-purple, white centre, fringed edge; Ne plus ultra, rose-purple; Nero, dark rosy purple; Old Port, purple plum; Purpureum elegans, fine purple; Purpureum grandiflorum, good; Sir Thos. Sebright, purple, bronze blotch; Schiller, bluish purple; Silvio, purple, yellow centre; Surprise, lilac, chocolate blotch; William Downing, dark puce.

Rose, with shades.—Alexander Dancer, bright rose, fine truss; Elfrida, bright rose; Giganteum, rose, chocolate spot; John Spencer, rose, late, one of the best; Lady Armstrong, rose, much spotted; Lady Emily Peel, rose, dark spot; Lady Falmouth, beautiful rose, with a very dark spot; Lord John Russell, pale violet rose, intensely spotted; Marchioness of Landsdowne, rose, heavily spotted, very effective; Mrs. Thos. Wain, pale rose, brown blotch, very good; Mrs. Thos. Agnew, light rose, brighter edges, yellow centre, very telling; Stella, pale rose, chocolate spot; Towardi, rose, finely spotted; Velasquez, cherry rose (early); W. E. Gladstone, deep rose, beautiful, very fine truss.

Shades of pink and salmon.—Concessum, rose pink (late); Everestianum, lilac pink, good fringed; Garibaldi, salmon pink, fine habit; Lady Eleanor Cathcart, deep rose pink, large dark blotch, telling; Lady Frances Crossley, rosy salmon, very beautiful; Mrs. Frederick Hankey, salmon, richly spotted; Mrs. R. S. Holford, rosy salmon, distinct and fine; Notabile, rosy pink, fine; Sylph, bright rosy pink; Vivian Grey, rosy pink, distinct and beautiful.

Shades of crimson, scarlet, red, and magenta.—Admiration, rosy crimson, dark spot; Alexander Adie, rosy scarlet (late); Atrosanguineum, fiery crimson; Achievement, rich crimson; Brayanum, bright crimson; Broughtoni, rosy carmine crimson (early); Caractacus, purplish crimson; Charles Bagley, cherry red, very good; Charles Dickens, crimson scarlet, fine habit and foliage; Countess of Clancarty, rosy crimson; Cynthia,

good rosy crimson, large truss; Decorator, clear bright scarlet, dark spot; Doncaster, scarlet crimson, lighter centre, very good; Edward S. Rand, scarlet crimson; Earl of Shannon, dark crimson, prettily spotted; Frederick Waterer, intense fiery crimson; Francis Dickson, scarlet crimson, fine; Hermit, rich crimson scarlet; H. W. Sargent, rich crimson, splendid variety; James Bateman, rosy scarlet; James Mashall Brookes, deep crimson; James Mason, bright red; John Walter, brilliant crimson; John Waterer, very rich crimson; Kate Waterer, rosy crimson, yellow marking, distinct; Lady Clermont, crimson, black spot; Louisa, Countess Ashburton, scarlet crimson, good habit; Lord Eversley, intense crimson, black spot, very fine and free; Michael Waterer, brilliant crimson; Mrs. Fitzgerald, crimson spotted, prefers a shady situation; Mrs. John Waterer, rosy crimson; Mrs. Shuttleworth, scarlet, lighter centre, distinct; Mons. Doffoy, rosy crimson; Mrs. Wm. Bovill, rosy scarlet crimson; Othello, crimson, tinged maroon; Pelopidas, very fine crimson, large truss; Raphael, rosy crimson, intensely spotted; Ralph Sanders, rich purplish crimson; Sunray, rosy red, good colour; Sunshine, fiery crimson; Sigismund Rucker, magenta, much spotted, distinct and good; Sir R. Peel, spotted rose crimson; Sir Wm. Armstrong, pale crimson (late); The Moor, dark crimson; The Grand Arab, showy crimson; The Cardinal, scarlet crimson (early); The Warrior, scarlet crimson; Titian, rosy crimson; Vandyke, rosy crimson; Victoria, claret crimson.

Lake, and very dark shades.—Sir Joseph Whitworth, lake, with clusters of very dark spots, free and bold flowers; Nigrescens, very free and dark.

Margined varieties.—Baroness Lionel Rothschild, pale centre, with intense crimson margin; Duchess of Sutherland, white, with broad margin of rosy lilac; Lady Ilchester, pale centre, crimson edge.

GRAPES CRACKING.

I THINK that the action of endosmose on vegetation generally is admitted by most gardeners, but not so its action on fruits such as Grapes, Cherries, Plums, &c., as described by "A Thinker," and am doubtful if all eminent scientific men are agreed on the subject in question—viz., endosmose and exosmose taking place through the skins of fruit such as the above-mentioned. Before this controversy ends I would like to remind "A Thinker" that Dutrochet proved by a variety of experiments that the two processes of endosmose and exosmose were always reciprocal to a certain degree. He found that while a portion of one fluid passed inwards, a certain portion of the interior fluid also passed outwards; but that the power predominated which transferred the lighter to the denser fluid. Now this being so, it necessarily follows that some traces of the sugary juices escaping from the Grapes would be found on the skins of the berries, which I have never observed myself, nor have I heard of anything of the sort coming under the observation of anyone else; besides, if the precious juices of Grapes were to escape by the reciprocal action of exosmose it would, in my opinion, be contrary to the general economy of Nature.

In reply to Mr. McIndoe's remarks on page 478 I would tell him that his quotation from Dr. Lindley does not prove that the Doctor thought that fruit absorbed vapour through the skin. He distinctly says "That it is by endosmose that vapour is absorbed from the atmosphere and water from the earth. The sap is attracted into fruits by virtue of their greater density." I take this to mean that in the case of fruits the sap is attracted to them by the action of endosmose through the roots and branches. If this is not what Dr. Lindley had in view I do not understand the latter clause of the quotation—namely, "that it is by endosmose that water is absorbed from the earth."—HUGH HENDERSON.

CHISWICK.

A FUCHSIA TRIAL—FRUIT—CAULIFLOWERS.

"OLD CHISWICK" is looking well now and is full of promise. Under glass the Fuchsia trial has just been concluded and the honours awarded by experts—the following members of the Floral Committee, who assembled in the Gardens on Monday last:—Messrs. Shirley Hibberd (Chairman), Fraser, Hudson, Pollett, Dominy, and Barron, Secretary. The Fuchsias, which were supplied by Messrs. H. Cannell & Sons of Swanley, have been grown in the Gardens and flowered chiefly in 5-inch pots, the plants ranging from 1 to 2 feet and upwards in height, according to their habits. They were in the best of health when scrutinised, bearing stont clean foliage and clothed with beautiful flowers. They can be best described as handy decorative plants, such as are sold in Covent Garden, and extremely attractive such plants are, though they are not seen equally sturdy and floriferous in all gardens where these graceful plants are cultivated.

The Chiswick collection is a large one, about 150 varieties having been submitted to the Committee. All the sections were represented from the oldest to the new varieties, from the smallest in cultivation to the largest. In granting certificates on this occasion no regard whatever has been paid to the time the varieties were placed in commerce, merit alone having been the test. Old varieties were as readily honoured as the new—that is to say, varieties of 1884 or 1885 had no favour shown to them because of being new. This, in a trial of this kind, is as it ought to be, and some good old varieties have thus received high official approval for their distinctness, freedom, or beauty.

CERTIFICATED VARIETIES.

Single Light-sepalled Varieties.—Lady Heytesbry: Purplish corolla, well known as one of the most floriferous and effective, and is grown by thousands for market purposes; has been previously certificated. Prince Alfred, very sturdy and floriferous, evidently closely allied to the good old Rose of Castille, but with a darker corolla. Both these are varieties of great

decorative value, but preference has been given to the former. Miss Bright: Very similar to the very free and useful variety Lustre, but possibly with larger blooms and more floriferous in a small state; corolla rosy salmon. Ellen Lye, a very good variety of 1884, with large yet elegant flowers, and very free; corolla rosy scarlet. Erecta, var. Novelty: Well known by the numerous flowers being borne on short stout peduncles, preventing their drooping in the orthodox manner, and on that account quite distinct, also attractive. Albo-coccinea: Also distinct, and familiar to many by its white crimson-tipped sepals, and decidedly ornamental when well grown and coloured as at Chiswick.

White Corollas.—Artaban: Double, a free grower and profuse bloomer, with large conspicuous blush white flowers; very effective. Berliner Kind: Also double, with large massive flowers; habit very dwarf; an improvement on Miss Lucy Finnis. Flocon de Nieve (or, in English, Flake of Snow): Single, well-formed corolla, a good grower and free bloomer; very good indeed.

Salmon.—A familiar type of this section is Lord Beaconsfield, which was, however, passed by the Committee, only the following trio being honoured:—Madame Aubin: Free, elegant, and effective; salmon scarlet corolla. Mrs. Rundell, very graceful and bright; a seedling from Lord Beaconsfield, and probably the best in its section; corolla orange scarlet. It has been previously certificated. M. Dufaure: A distinct and effective variety, with large flowers; sepals red and white, corolla rosy lake.

Single Dark Corollas.—Dr. Sankey: A new perfectly distinct and highly effective variety. A description of this Fuchsia worth reading will be found on page 100 of Cannell's "Floral Guide." It is truly said there that the striking feature of the flower is the large, long pendulous blooms and long peduncles, or flower stalks; but the colour is left out. It is what is called a self, the prevailing colour, sepals and corolla being ruby red. It is a free grower, producing an effect at once bold and graceful—certainly distinct and effective. Crimson Globe: A strong erect grower, producing large globular buds, which develop into handsome purplish crimson blooms. Spitfire: A good sturdy grower, and floriferous, with medium flowers of great substance, and dark magenta in colour. Charming: lighter in colour, very free, and, as its name denotes, charming. President: A strong grower, yet a profuse bloomer; flowers large, of great substance, corolla purplish plum colour, very effective. Minerva: free in growth, floriferous, blooms massive yet elegant, corolla rosy magenta, very good.

Double Dark Corollas.—Avalanche: There is scarcely any need to describe this old, very free and useful Fuchsia, which in habit of plant, freedom of growth and flowering, size and symmetry of blooms, is unequalled. Phenomenal: Certainly a wonderful variety, and no very great mistake will be made by referring to it as a magnificent monstrosity. It is gigantic, quite surpassing the so-called "Champion of the World," which was hence prematurely invested with its heroic name. Admirers of Fuchsias who have grown the latter may well try the former, while if there are any who have not grown either may try both. If another of this type should be forthcoming excelling these its name will perhaps be "Prodigious;" it is not, however, very easy to imagine a Fuchsia larger and more massive than is Phenomenal. One other certificated variety has to be named—Lord Wolseley. This is very distinct, beautiful, by far the best of all the striped or marbled varieties, while the habit of the plant and symmetry and substance of the blooms are excellent. The corolla is single, of great substance, purplish crimson marbled with—well, for the sake of being intelligible instead of scientific we will say whitewash. Every flower on the plant was conspicuous by the bold contrasting colour of the corolla, and if this property is fixed, hence constant, Mr. Cannell has not done justice to this variety in his "Guide."

There are many other excellent varieties in the collection, not a few of which closely approach in merit those to which certificates were granted, and it is to be remembered that it is not possible to have every variety in its best condition on a given day.

FRUIT.

Possibly there never was such a full crop of Pears at Chiswick before, and the work of gathering and storing in the autumn will be no light task. Hundreds of the splendidly grown pyramid trees are laden with fruit from base to summit. The trees are throwing off a portion of their too heavy burden, but thousands more must be taken, or the fruit will be small and the trees unduly exhausted. Mr. Barron is quite alive to the importance of thinning hardy fruit where it is superabundant, and he further proposes to give the trees a heavy top-dressing of rich manure, being convinced that the investment will be remunerative.

The Apple crop is also good, a quarter of young trees worked on Paradise stocks a few years ago being remarkable by their great productiveness. It is noticeable, too, that some of the earliest-blossoming varieties are bearing far more heavily than others are that blossom decidedly later, though the blossoming of all were later this spring than usual. Several varieties of Plums are bearing good crops, while others are barren. The Victoria is conspicuous by its heavily laden branches, and this is undoubtedly one of the most serviceable Plums in cultivation.

Under glass there is abundance of fruit—Grapes. The Vines in the long corridor have certainly never looked so well as they do now. They consist mainly of Gros Colman, with a few of Alnwick Seedling, and the crop of both is good, the bunches of the latter being full, but had received a little assistance in fertilisation. Most or all of the Alicantes have been removed, and the space they occupied more profitably filled by the varieties named. The border inside the house is thickly covered with rich stable manure, and the air is impregnated with ammonia, which the Vines enjoy, while it is an excellent preventive of insects. It should never be given until Grapes are swelling freely after having been thinned, and then early morning ventilation is essential or the leaves are liable to be scorched. This hint is given for the information of amateurs; gardeners who have had experience on the subject need it not. The Duke of Buccleuch Grape has been planted more than once at Chiswick, but a good rod has never been produced until the present, and this is from a graft attached to a Vine of Madresfield Court, a rod of which is carrying a good crop, with the fine Duke cane reaching the top of the house by the side of it. Query, Will the Duke prosper the better with the nursing rod of its host retained or removed? The crop of Grapes in the great vinery is full and good, but right in the middle of the house

several of the growths are attacked with mildew. They are of the same varieties as others that are free, are in the same border, have in all respects the same treatment, and before the attack appeared equally healthy. There was a similar outbreak in the same place last year. The bunches and leaves are being dusted with sulphur, which will be eventually washed off with rain water. The resting spores of the mildew presumably lurk in that part of the great structure, and a determined effort will doubtless be made in the winter to destroy them. Mildew on Vines appears to be prevalent this year in many places, and those will act wisely who act promptly by dusting the affected parts with sulphur as they do at Chiswick.

CAULIFLOWERS.

A considerable number of so-called varieties of these are on trial, and some of them are distinct enough, while several resemble each other very closely. Only the earliest are ready for cutting now, the first and best being probably Haage's Dwarf (Anderson), sent from Copenhagen. The stock is very true, heads small, white and compact. Following very closely indeed are Benary's Dwarf and Carter's Early Erfurt, with nothing to choose between them; then for succession come Benary's Large White Early and Vilmorin's Alleaume. All those named are far in advance of Early London, Stadtholder, Walcheren, and others which are not showing any signs of heads. Thus useful work is being done at old Chiswick, and a satisfactory season is anticipated.

CUCUMBER ROOTS DISEASED.

IN your issue for June 4th, in answer to correspondents, the disease which strikes the Cucumber plant is as you have fully described, and I should like to say that completely covering the affected roots and stems with quicklime, and this again with ordinary soil, giving no water for several days, will completely kill the disease. The plants will again start freely into growth as if no disease had been there.—S. W., *Yorks.*

[We are obliged to "S. W." for his letter, and shall be glad if any of our correspondents whose plants may be affected and who may try the lime remedy will favour us with the results. We have seen lime used ineffectively, but it may not have been applied in sufficient quantity for accomplishing its purpose.]



AT a general meeting of the ROYAL HORTICULTURAL SOCIETY, held last Tuesday, C. Noble, Esq., in the chair, the following candidates were elected Fellows—Mrs. J. J. Martin, R. Squire, Esq., Milton Syer, Esq.

— THE Rev. L. Garnett writes:—"D., Deal," has made a mistake in regard to the date of our Rose Show at CHRISTLETON. It is to be held on July 14th, not 16th. We are only two miles from Chester station, and therefore very accessible. While endorsing "D., Deal's," remarks as to the general promise held out by the condition of our Roses, I have to lament the presence of much mildew among my Teas both in the open ground and against a wall. I wonder if this is the case with others, and why it should come so early."

— THE second Show of the BEDFORDSHIRE HORTICULTURAL SOCIETY will be held on July 15th. Special prizes are offered for Roses, the competition being open to all.

— A SCOTCH correspondent sends a sprig of the VARIEGATED DAPHNE MEZEREON, and remarks that "The bush is 4 feet 6 inches in height, and 2 feet 6 inches in diameter, having a fine appearance just now. A local nurseryman says that he had never seen anything like it, nor have I seen it described in any catalogue." We have seen similar examples before, and some in which the variegation was even more clearly marked than in this; but it is not very common.

— A FULL report and tabulated analyses have been prepared by Dr C. Meymott Tidy and Professor Dewar respecting THE NATIVE GUANO COMPANY'S A B C SEWAGE PROCESS at Aylsbury, and the result of a number of carefully conducted experiments satisfactorily proves the efficiency of the method adopted. The effluent is practically clear and free from suspended matter, while the whole is deodorised immediately it enters the works.

— IN reference to the proposed AURICULA ELECTION, Mr. H. A. Rolt desires us to say that if those who have omitted to send their returns do not do so before Saturday they will not arrive in time to be included.

— WE have received from our correspondent "S. P. E. S." blooms of

a DOUBLE-BLOSSOMED APPLE, which originated as a bud-sport on a tree producing ordinary single flowers. It is very double, as much so as a Rose, and is about 2 inches in diameter, white, with a rosy tinge in the centre. It is to be hoped that our correspondent will keep a look-out for this another year, and if it is reproduced he should propagate the spray by grafting, so as to secure its permanency. It was in this way that the Scarlet Golden Pippin was obtained. There is a form of *Pyrus spectabilis* which frequently comes semi-double in the flowers, but this is quite distinct from that.

— THE eighth autumn Show of Chrysanthemums, fruit, and vegetables in connection with the CANTERBURY GARDENERS' SOCIETY will be held at the Foresters' Hall on November 13th and 14th. Special prizes will be offered, open to Kent. Mr. Fricker is the Secretary.

— A CORRESPONDENT writes to us:—"I have been for some time in the neighbourhood of Limerick, and have paid a visit to GLENSTAL, SIR CROKER BARRINGTON'S beautiful domain, where the display of Rhododendrons of every shade and tint is truly magnificent, and the many beautiful shrubs and Conifers quite surprising. Araucarias are quite 60 feet high, and branching to the very ground. I was much struck by a mass of *Azalea pontica*, fully 10 feet high. This beautiful place is well worthy of a visit."

— CALLEY'S POLISH STAIN FOR WOOD, which is made by the Torbay Paint Company, is the best thing of the kind we have met with. It acts not only as a stain, but as a varnish combined. We have tried both the pale and the dark oak colours applied to ordinary deal, and the effect is very good on such fancy articles as young ladies delight in decorating, such as milking stools, screens, and ornamental brackets. But though we have only seen them used for such purposes as we have indicated, we find that these stains are equally applicable to floors and all other kinds of woodwork, finishing the surface with a fine polish, and not with a dead colour, as some stains do, and which require to be polished afterwards. The floor polish of the same company is very effectual in producing a fine polish on stained floors, a small quantity being sufficient for the purpose.

— THE Summer Show of the WINCHESTER HORTICULTURAL SOCIETY will be held on July 16th. A well-arranged schedule is provided, and good prizes offered for plants, cut Roses, fruit, and table decorations. The chief prizes are £10 for twelve stove and greenhouse plants, £4 for forty-eight Roses, and £2 for six dishes of fruit. Messrs. Porter and Colson are the Honorary Secretaries.

— MR. OWEN, Castle Hill, Maidenhead, sends us two extremely fine blooms of *FUCHSIA GENERAL GORDON*, which he states are from a plant in a 60-size pot. The corollas are $1\frac{1}{2}$ inch long, the petals very broad, and of a fine purple hue, veined with scarlet at the base; the calyx is of a fine bright scarlet colour, the lobes strongly reflexed. The plant is said to be of good habit, free in growth and flowering, and therefore must be a very useful variety.

— THE same correspondent states that he has several CHRYSANTHEMUMS IN FLOWER, including "a new Japanese variety named Coquette de Castille, also Mdle. Melanie Fabre, M. Vivian Morel, colour silvery lilac, with broad petals. The plant is growing in a 48-pot expanding four blooms. In addition to the above I have the following varieties in bloom and bud:—George Glenny, Isodore Feral, Carmen, Lawrence, Lyon, Garnet, Belle Paule, Baron de Prailly, Peter the Great, Etoile Toulousaine, Flamme du Punch, M. Tarin, and Brunetti."

YOUNG VINES FOR EARLY FORCING.

THE old system of growing Vines from eyes and forcing them in the 10 or 12-inch pots in which they were grown will, I venture to predict, soon become obsolete. Many, however, still cling resolutely to this old practice, and vigorously condemn any innovation as unreliable. Long before I had the responsibility of producing a crop of early Grapes from Vines in pots I failed to see the force of clinging to a practice that had nothing to recommend it but labour, care, and uncertainty.

After a Vine has been twelve months, or nearly so in a pot, and has filled it with a mass of roots, it exhausts the soil of its fertility and becomes dependent for future sustenance upon food supplied. That the soil was considered exhausted is proved by the fact that one of the essentials of this old system was large quantities of liquid manure after the roots once commenced activity. This system of feeding was, and is, carried on with unceasing regularity until the berries commence colouring, when it must be discontinued, or insipid flavourless Grapes will be the result. Whether this system of feeding is complete must be left to its advocates to prove; its incompleteness led me to abandon it and adopt

another, by which food could be at the command of the Vines at the time when they most needed assistance to swell and perfect their berries during the colouring process.

There is no comparison between the Grapes grown on Vines confined to the pots in which they were grown and those from Vines placed in 14-inch pots when their shoots have advanced from 2 to 8 inches in length. I have grown Vines, produced under exactly the same conditions, on both systems side by side, and those potted were so much superior both in colour, size of berry, and flavour, as well as in the appearance of the Vines, that it would have been impossible for any outsider to have realised that they were Vines of the same size, age, and strength at the beginning of the season. This is not the only advantage gained by the system of potting young Vines as I recommended in these pages some years ago; those forced in the pots in which they are grown are useless after the fruit has been cut, while those repotted are capable of yielding a better crop of fruit the second than the first year. The former for the supply of a crop of Grapes entails considerable labour in the raising and growing of a batch of Vines annually. Vines raised annually from eyes for forcing cannot be ripened and rested so early in the season to allow of an early start like those potted and forced again the second year. This does not even exhaust the resources of these Vines, for they will carry a very creditable crop the third year. I have never retained them in the large pots for the third crop, but a friend who has adopted this system has done so, and his Vines are showing well again this year. Last season they were bearing their second crop, and the produce was decidedly the finest I have ever seen produced on Vines in pots.

My friend's practice differs slightly from the system I detailed, and as I consider it an improvement I will give it for the benefit of those who are compelled to grow a few early Grapes in pots. After the Vines have borne their first crop of fruit in large pots, and have ripened their wood and are pruned, they are turned out of their pots and supplied with fresh clean drainage, and over this some fresh compost is placed, thus elevating the surface of the ball higher in the pot, which allows a little soil to be placed all round the ball. This is repeated after the second season, bringing the surface of the ball level with the rim of the pot. A rim is formed round the side, with portions of turf to allow of a good supply of water being given. It will be seen that instead of top-dressing, the fresh compost is placed at the base and round the sides of the ball, a little of the old soil being carefully removed where practicable.

The above system is a good one, and may be practised by all with success where it is not convenient to plant out the Vines in a small prepared border about 18 or 20 inches in width. It may be mentioned, for the benefit of those that have not yet practised the potting system, that careful watering is needed for some time, until their roots are active and working freely in the fresh compost. The planting-out system is decidedly better than growing the Vines in pots of a large size. If raised in pots the Vines should be planted out in a green state, or any time during their ripening period while the foliage is fresh and the roots active, so that they become established, or partially so, before they go to rest. Under these circumstances they start freely, and there is not so much fear of the soil becoming dry. Some that were grown in pots fruited the first year in 14-inch size, and then planted out in a prepared border the following season when they had 1 foot of growth upon them, have carried four good crops of early Grapes. Three Vines only have been retained for the purpose of testing them farther, and they are this season showing greater vigour and the prospect of a better crop than during the past two years. This clearly shows that the system of raising Vines in pots annually—which to have them in good condition for forcing gives unspeakable trouble, for they require constant attention during the whole season to have them ripe early and in the most satisfactory condition for forcing early—will before very long be regarded as a system of the past, for it is by no means the easiest and most economical plan that can be practised of obtaining an early crop of Grapes. The system by which an early crop can be obtained with a minimum of labour and care shall be detailed in a future issue for the benefit of others.—WM. BARDNEY.

ERICA CAVENDISHIANA.

ONE of the most useful of all the Heaths is *Erica Cavendishiana*, and none makes a more effective exhibition plant than this free-growing and floriferous hybrid. Visitors to the chief London and provincial shows during the summer months are accustomed to seeing large and handsome specimens of it, but probably the best that has ever been staged is that of which an illustration is given in fig. 126, a reproduction from a photograph of the wonderful plant with which Mr. Cypher of Cheltenham has gained so many honours. Twice at Regent's Park this year, at Manchester, and several other places it has been most prominent amongst the other fine examples of culture from the same establishment, and it has awakened the admiration of all plant-growers. The specimen is very evenly developed, over 6 feet high and as much in diameter, in perfect health, and covered with large brightly coloured flowers; not a fault could be found with it, for unlike many large specimens, it was as fresh as a three or four-year-old plant. This is one of the distinguishing characters of all Mr. Cypher's plants, and is ensured by a liberal system of culture resulting in a vigorous clean growth, such as is always so pleasing.

Comparatively few are aware that this Heath is a hybrid, and one of

the sixty or more with which Messrs. Rollisson & Sons, of Tooting, enriched our collections. Writing about it in 1847, Paxton thus describes its origin:—

“It originated about eight years ago (1839) in the nursery of Messrs.

the brighter yellow of its blossoms. Besides these, it may be distinguished by the strong upright main branches from which short lateral shoots issue on every side, each ending with from two to four flowers, altogether forming a complete pyramid of blossom. *E. depressa*, on the other hand



Fig. 126.—ERICA CAVENDISHIANA.

Rollisson & Sons at Tooting, who have long been famous for their superior management of the genus. The seeds from which it sprung were produced by *E. depressa* fertilised with the pollen of *E. Patersoni*. It inherits many of the characteristics of the seed-bearing parent, but differs from it in possessing a more robust habit, in its greater rapidity of growth, and

has decumbent branches, with much longer lateral growths; the flowers consequently are not arranged pyramidally, but appear more scattered, and less showy. In addition to the foregoing distinctions, there are several minor points of variance by which they may be distinguished from each other, amongst which we may instance the greater length and

tenuity of the foliage of our subject, and its anthers having somewhat longer awns or spurs at the base than those of its parent."

For decorative purposes no Heath can surpass *Erica Cavendishiana*, as it is free in growth and flowers most abundantly with ordinary care, and young plants are extremely ornamental in the conservatory. It may be added that the name is commonly erroneously spelled *Cavendishi*, the correct termination being that given above.

ROYAL METEOROLOGICAL SOCIETY.

THE concluding meeting of this Society for the present session was held on Wednesday, the 17th inst., at the Institution of Civil Engineers, 25, Great George Street; Mr. R. H. Scott, F.R.S., President, in the chair. Lieut. A. Leeper, R.N., was elected a Fellow of the Society.

The following papers were read:—

1, "A few Meteorological Observations made on a Voyage up the Nile in February and March, 1885," by Dr. W. Marcet, F.R.S. The author on a voyage up the Nile from Cairo to Assouan made a series of meteorological observations, and in the present paper gives the results of those relating mainly to nocturnal radiation and the temperature of the water of the Nile.

2, "The Mean Direction of Cirrus Clouds over Europe," by Dr. H. H. Hildebrandsson, Hon. Mem. R. Met. Soc. The author has collected a number of observations on the movements of cirrus clouds over various parts of Europe, and after discussing them has arrived at the following results:—1, The mean direction at all stations lies between south-west and north-west; 2, In winter the cirri come from a most northerly direction, and in summer from a more southerly; 3, in winter the northerly component is greater on the Baltic and the north coast of the Mediterranean; 4, The mean directions of the upper currents nearly coincide with the mean tracks of storm centres; 5, The upper currents of the atmosphere tend in general to flow away from those areas in which a barometrical depression exists at the earth's surface towards those in which there is an elevation of pressure.

3, "On the Influence of Accumulations of Snow on Climate," by Dr. A. Woeikoff, Hon. Mem. R. Met. Soc.

4, "Note on the Weather of January, 1881," by Mr. E. Harding, F.R. Met. Soc. It will be remembered that the weather of January, 1881, was remarkable for the prolonged and exceptionally severe frost; the heavy gale of the 18th and 19th; and the snow storms. The author has prepared isobaric charts for the North Atlantic and adjacent continents for January, 1881, and compared it with similar charts for January in other years. He shows that the severe weather in 1881 was due to a reversal of the normal conditions, the atmospheric pressure being high in the north and low in the south.

5, "Results of Meteorological Observations made in the Solomon Group, 1882-84," by Lieut. A. Leeper, R.N.

6, "Graphic Hygrometrical Table," by Mr. D. Cunningham, M. Inst. C.E., F.R. Met. Soc.

SCHOMBURGKIAS.

THIS interesting genus of Orchids was named in honour of the celebrated German traveller, Sir Robert Schomburgk, the well-known scientific explorer of British Guiana, and the introducer of that grand Water Lily *Victoria regia*. It contains but few species. In general appearance and habit they somewhat resemble *Cattleyas*, but in reality they are more nearly allied to *Epidendrum*. From the *Cattleyas* they may be distinguished by the half cucullate lip being joined to the edge of the winged column, and from *Epidendrum* by the lip being petaloid and winged, and in having eight pollen masses instead of four. The pseudo-bulbs are large and elongated, two to three-leaved. Leaves coriaceous in texture. Scape terminal, sheathed. Bracts large, spathe-like, and dry. Flowers handsome, aggregated into a somewhat spherical head at the extremity of the peduncle. Sepals and petals nearly equal, spreading, all free and equal at the base. Lip diffringed, membranaceous, three-lobed; side lobes incurved, or somewhat cucullate, but not enclosing the winged column, to the edge of which it is joined at its base. Pollen masses eight.

Culture.—Schomburgkias should be potted in the same manner as the Brazilian *Cattleyas*, but during the period of rest they may be kept drier with advantage. The greater substance of their pseudo-bulbs prevents them from shrivelling so soon, and they require a more decided rest to induce them to flower freely.

S. undulata.—Pseudo-bulbs large, clavate, terete at the base, swelling upwards, furrowed about a foot high, enveloped in large imbricating sheaths. Leaves in pairs, oblong, obtuse, thick and leathery, 9 to 12 inches long and 2 to 3 inches broad, dark green. Scape upwards of a foot long, bearing near the summit a raceme of twelve to twenty flowers. Sepals and petals about equal, oblong, ligulate, very much twisted, and undulate on the edges, all of a uniform brown, slightly shaded with purple. Lip three-lobed, and pressed up almost parallel with the column; side lobes rounded, incurved, soft purple; mid-lobe ovate, acute, deep purple at the margin. Disc white, traversed by five undulated lamellæ. Column winged, purple. It blooms during the winter months. Native of New Grenada, at 2400 elevation. 1844.

S. Lyonsi.—Dr. Lindley first described this species in 1853 from flowers sent him by J. C. Lyons, Esq., of Mullingar, whose collection of Orchids at that time was a very rich one. In speaking of this plant the Doctor remarks, "Perhaps this is the prettiest of the Schomburgkias. When out of flower there is nothing in it to attract notice; but the flowers are quite different from those of any previously known species. They are pure white, with rich purple spots and speckles. The lip is of nearly the same form as the other plants, but more taper-pointed, dull violet with a

yellowish edge and rich crimson ribs. The anther is very remarkable for bearing in front a pair of yellow horns curved like those of an ox." In the figure we have here quoted the colours do not quite correspond to the description by Dr. Lindley; and Sir Wm. Hooker in describing it says, "The spike of this *Schomburgkia* was sent to us by Messrs. Rollisson and Sons of the Tooting Nursery. In our specimen the lip is equally white with the sepals and petals, and scarcely spotted at all. In the specimens described by Dr. Lindley from Mr. Lyons' plant the lip was dull violet, with a yellowish edge, and deep crimson ribs." Thus the only two plants of this species which had flowered proved distinct varieties. In habit of growth and general appearance there is little to distinguish it from the previous species. Flowers large, nearly 2 inches in diameter. Sepals and petals equal, ovate, obtuse, and beautifully crisped, white, banded with transverse lines of purple spots. Lip undivided, recurved, acute, prettily crisp on the margin. It blooms in the months of August and September. Native of Jamaica. 1853.

S. crispa.—Pseudo-bulbs fusiform, furrowed, about a foot high, bearing a pair of oblong, obtuse, leathery, dark green leaves. Scape terminal, many-flowered. Flowers racemose. Sepals and petals nearly equal, beautifully crisp, and of a uniform deep brown, tinged with yellow. Lip ovate-oblong obtuse, obtusely three-lobed, and about the same size as the segments of the perianth, white, with several undulated ridges traversing the disc. It blooms during the autumn and winter months. Native of Demerara. 1837.

S. marginata.—The habit of growth is so similar to the preceding species that it is not necessary to describe. Flowers racemose, soft purple, margined with yellow. Sepals and petals ligulate, obtuse, prettily waved. Lip rounded, acute. It blooms during August and September. Surinam. 1834.

S. rosea.—This species is extremely rare; indeed we have seen it but once, and that some years ago in the celebrated collection made by the late G. W. Schiller, Esq., of Hamburg. The sepals and petals are deep red, and the lip rose colour. Native of Santa Martha.

S. tibicina.—A very bold-growing handsome species; the large pseudo-bulbs are quite hollow and smooth inside, and are in very great demand by the native children, who use them for trumpets, from which has arisen its common name of the Cow-horn Orchid. Another peculiarity is, that at the base of each of the pseudo-bulbs there is always a small hole, a fact which the ants are not slow in perceiving, and very soon make them their homes. Pseudo-bulbs conical, horn-like, furrowed, 1 to 2 feet high, green when young, changing to golden yellow with age, and bearing upon the summit mostly three leaves, which are oblong obtuse, very thick indeed, some 6 to 9 inches long, and bright green. Scape terminal, erect, 3 to 5 feet in length, many-flowered. Flowers racemose, 1 to 2 inches in diameter, and very showy. Sepals and petals about equal, beautifully undulate and crisp, rosy purple. Lip oblong, cucullate; lateral lobes rounded at the top; mid-lobe somewhat rhomboid, emarginate, purple, with an orange-yellow disc, which is ornamented with fine elevated parallel ridges. It usually blooms during the months of May and June, but is by no means a free-flowering plant in cultivation. Native of Houduras. 1836.

S. tibicina var. grandiflora.—A variety with very large flowers, measuring some 3 to 4 inches in diameter; perianth usually marked in the same way as in the normal type; the incurved lateral lobes of the lip white; mid-lobe yellow outside; disc white, broadly margined with violet. It blooms during spring and early summer. Houduras. 1843.—G. W.

HOT-WATER PIPES.

IT has not been demonstrated that hot-water pipes caulked with iron filings have been superseded by other systems more lasting and reliable. The last notes on this subject from your correspondents, Messrs. Foster and Pearson, go a long way to prove the soundness of what I have written. The use of iron filings has evidently been discarded by some, simply because the men entrusted with the work do not perform their portions of it properly, and not because the system itself is faulty. In my second letter I pointed out that too much sal ammoniac used with the filings was the prime cause of joints bursting; but, surely, when the composition for making them has been improperly mixed the system cannot be condemned on such grounds. The men in charge are frequently careless in mixing the filings and other ingredients no one familiar with hot-water pipes will dispute. Frequently the boy, who probably has not been in the shop but a few months, is entrusted with the important process of mixing. Many times I have heard the order issue forth, "Boy, get those borings mixed;" this is the cause of faulty joints when made with iron filings.

The hint given about the water entering the rope only assists in proving what I wrote in condemnation of rope joints and a layer of patent putty used largely by a "foremost" firm. I have taken out joints here that have been in fully fifty years, and I can conscientiously say they were equally as good as the day they were made, for I had a large number of the joints broken on purpose to examine the metal.—WM. BARDNEY.

THE RELATIVE VALUE OF MANURES.—In reference to a paragraph on Beeson's manure on page 458, and to remarks upon it by "A Thinker" on page 500, it appears to me to be of great importance that the attention of gardeners should be called to the relative value of manures. The price at which a manure is sold is one thing, the quantity recommended to be used another, and both should be considered. A peck of Beeson's has been recommended to a barrowload of loam, while 2 lbs. to a barrowload is recom-

mended for Clay's. Obviously the prices above do not determine the relative values of either of these fertilisers.—ANOTHER THINKER.

ROYAL HORTICULTURAL SOCIETY.

JUNE 23RD.

SPECIAL provision was made in the schedule issued for the Show of this occasion to ensure an extensive display of Pelargoniums; but as regards the plants the efforts were unsuccessful, and in several cases those entered scarcely deserved prizes. In the cut blooms there was better competition, but it could not be regarded as a satisfactory or representative exhibition of these brilliant and varied plants. On the other hand, Roses and hardy plants were grandly shown, and the cut Roses won the admiration of all, so fresh and handsome were they. Heaths were unrepresented, one collection each of Gloxinias, Palms, and Ferns being all that were staged. Still, the conservatory was filled with groups and collections of plants and flowers, much space being occupied by those not in competition, and very prominent amongst them was the large choice group of hardy flowers from Mr. T. S. Ware, Tottenham. Messrs. Kelway, Barr, Paul & Son, Cannell, and House also adding materially to the beauty of the Show.

Pelargoniums.—The principal class was for eighteen Show, Decorative, and Fancy varieties in 6-inch pots, and though the prizes were £5, £3, and £2 respectively, they only brought two competitors—namely, Mr. C. Turner, Slough, first, and Mr. H. Little, Uxbridge, second, neither of whom showed so well as they have on previous occasions. The Slough plants were of medium size, flowering freely, and representing some very choice varieties, especially notable being the following:—Irene, fancy, with neat rose and white flowers, very pretty. Dido, show, brilliant scarlet, with a narrow blotch in the upper petals. Seyla, show, white centre, pink lower petals, and maroon upper petals. Lady Isabel, decorative, mauve purple. Duke of Albany, salmon lower petals, white centre, maroon upper petals. Florence, show, dark scarlet, with maroon feathering, white centre, free and beautiful. Mons. Demoulin, show, rosy salmon, white edge. Mandarin, scarlet, black upper petals. Madame Albert Decaris, decorative, curious and distinct, white centre, rose margin, with veins of the same colour running into the centre, apparently with somewhat of the fancy character. Other good varieties were Robina, Florence Thomson, Mr. Ashby, Alice, Gold Mine, and Confessor. The Hillingdon plants were smaller and not quite so well flowered as the others, but several handsome varieties were represented. For nine Zonals the third prize was awarded to Col. W. P. Talbot, Glenhurst, Esher (gardener, Mr. C. J. Waite), one of his best plants being *Candidissimum plenum*. Mr. Little was the only exhibitor of eighteen Zonals, and was also awarded the third prize for plants of little merit.

W. Clay, Esq., Grove Road, Kingston (gardener, Mr. Wiggins), had the most interesting contribution amongst the Pelargonium plants, which consisted of a group of 160 seedlings, chiefly of the Show, Decorative, and Regal types, and including some varieties of great beauty. One of the best was Thisby, which was certificated, and is described under that head. Other fine forms were Variety, white, with scarlet feathering in the upper petals, very free and beautiful; Reine Blanche, white, with a crimson blotch in the upper petals, and a few veins of the same colour in the lower ones; Dolly, blush, maroon upper petals; and Deadunene, white, with a slight pink spot on the upper petals, margin slightly undulated, free and beautiful. For this group a silver Banksian medal was deservedly awarded.

In the cut bloom classes there was fairly good competition, and several very fresh beautiful collections were contributed. Mr. C. Turner had the best twelve bunches of large-flowered Show or Decorative varieties, comprising the following:—Ritualist, Nellie Hayes, The Czar, Confessor, Mandarin, Chief Secretary, Comtesse de Choiseul, Outlaw, Magnate, Venus de Milo, Purpurea, and Veteran. Mr. H. Little was second, also with good blooms—Fortitude, Mrs. H. Little, and Princess of Wales being the finest. Messrs. H. Cannell & Sons, Swanley, were placed third—*Volonté Nationale* album being particularly good, as were also Madame Thibaut, C. Bernard, and Triomphe de St. Mande. Zonals were remarkably bright, Messrs. H. Cannell & Sons taking the lead with handsome blooms, such as we are accustomed to see from Swanley. The varieties shown were Mrs. Johnson, Jealousy Improved, C. H. Swinstead, Lady Chesterfield, Kentish Fire, W. E. Gumbleton, Queen of the Belgians, Constance, Ajax, Lord Chesterfield, and some unnamed seedlings. Colonel Talbot and Mr. H. Little were second and third respectively, but their blooms were much inferior to Mr. Cannell's. Though the Ivy Pelargoniums were unrepresented in the class devoted to these varieties, a charming collection was contributed from Swanley, which attracted much attention and admiration, as it deserved. Some of the most noteworthy of the varieties were as follows:—Emile Lemoine, double scarlet, very bright; Jeanne d'Arc, nearly white, double; La Rosière, purple, single; General Gordon, double, salmon scarlet; Congo, mauve; Madame Thibaut, rose, double, very fine. Of Zonal varieties the following were beautiful and distinct:—Belle Nancienne, salmon, double, full; Swanley Gem, scarlet, single, white eye, large and showy; Le Cygne, white, double. A pretty new Decorative variety was named Miss L. Cannell, and is of a bright crimson colour, with a very narrow white margin and a white centre. A bronze medal was awarded for this collection.

Roses.—Though the large specimen Roses which delighted visitors to earlier shows were absent, and smaller plants were not so numerous as on some former occasions, yet the display of cut blooms amply compensated for all other defects, and augured well for a most satisfactory season. These constituted the chief feature of the Exhibition, and were admired by thousands of visitors during the day. A class was provided for thirty Roses in 8-inch pots, and the two collections for which the first and second prizes were awarded—namely, those from Messrs. Paul & Son, Cheshunt, and Rumsey, Waltham Cross, were both distinguished by considerable merit. The Cheshunt plants especially were dwarf, compact, yet vigorous little specimens, bearing from four to a dozen blooms that in several instances would not have disgraced any stand of cut blooms. They were notable for their substance and rich or clear colours—points of great importance in a Rose, and the usefulness of plants of this size cannot be over-rated. Prominent amongst the varieties were Pride of Waltham, Grandeur of Cheshunt, Duke of Teck, La France, Dr. Andry, Marquise de

Castellane, Boule de Neige, and Violette Bouyer. In Mr. Rumsey's collection were uncommonly good examples of Gabriel Luizet, General Jacqueminot, Magna Charta, La France, and Princess Beatrice.

The principal class for cut blooms was open, and was for twenty-four single trusses, seven collections being entered, and all of more merit than is usually seen so early in the Rose season. Messrs. Paul & Son deservedly won first honours for most beautiful blooms, as fresh, bright, and substantial generally as could be desired, while several were unusually fine. The varieties were as follows:—A. K. Williams, Victor Verdier, Abel Carrière, Souvenir d'Elise Vardon, Etienne Levet, Marguerite de St. Amand, M. Alfred Dumesnil, H. Schultheis, Ulrich Brunner (a grand bloom that will scarcely be surpassed this season), William Warder, Madame Prosper Langier, Madame Gabriel Luizet, General Jacqueminot, La France, Mrs. Baker, Sultan of Zanzibar, François Michelon, Baron de Bonstettin, La Duchesse de Morny, Lady Fitzwilliam, Longfellow (a new variety, very dark, somewhat after the style of Sultan of Zanzibar but with more crimson in the flower), Souvenir de Malmaison, Sir Garnet Wolseley, and Comtesse de Serenye. Mr. J. House, Peterborough, also had a praiseworthy collection, and gained the second prize, his blooms being equally as fresh and bright as the first, but not possessing quite so much substance. Noteworthy amongst the best were Duke of Edinburgh, Etienne Levet, Jules Margottin, Catherine Mermet, Star of Waltham, Madame Gabriel Luizet, Mons. Noman, Beauty of Waltham, and Maréchal Niel. Mr. C. Turner, Slough, secured the third place with handsome blooms of General Jacqueminot, President Sinclair, Duchesse de Morny, Marie Van Houtte, and La France, amongst others of nearly equal merit. A stand of Tea varieties from Mr. G. Prince, Oxford, was commended, and comprised some lovely examples of Amazone, Princess of Wales, Mons. Furtado, and Comtesse de Nadaillac. R. E. West, Esq., Reigate, also had some fine blooms that were accorded a similar recognition.

With twelve blooms of Tea or Noisette varieties five exhibitors competed, and there Mr. G. Prince was easily first with a superb collection of blooms, grand in substance, clean, and charmingly fragrant. The varieties were Maréchal Niel, Madame Lambard, Reine du Portugal, Comtesse de Nadaillac, Souvenir de Madame Pernet, Mons. Furtado, Catherine Mermet, Alba Rosea, Niphotos, Anna Olivier, Marie Van Houtte, and Adam. Mr. House again secured the second place with neat blooms, the best being Madame Joseph Schwartz, Souvenir de Therese Levet, highly coloured; Marie Van Houtte, Alba Rosea, Jean Ducher, and Catherine Mermet. Messrs. Paul & Son followed closely. The best twelve triplets were staged by T. W. Girdleston, Esq., Sunningdale, Berks, and a beautiful, fresh, brightly coloured, and substantial collection, comprising excellent examples of the following:—Hippolyte Jamain, Cannes de Coquettes, Maréchal Niel, Lord Macaulay, Rubens, Dingée Conard, Marie Van Houtte, Charles Lefebvre, Annie Laxton, A. K. Williams, Lady Mary Fitzwilliam, and Grace Darling. Second honours were awarded to the Rev. F. H. Pemberton, Havering, who had smaller but very bright blooms, amongst which the purple-tinted and distinct Belle de Bordeaux was very noteworthy.

Pyrethrums were represented by three good collections, which in addition to those not in competition afforded an extensive display of these beautiful flowers. Messrs. Kelway, Paul, & Son, and F. Hooper, were the prizetakers in that order. Pinks were not of remarkable merit; Gloxinias, Ferns, and Palms being, as already stated, equally unimportant.

Miscellaneous.—Hardy flowers have been exceedingly well shown this year, but certainly one of the finest displays was that produced by Mr. T. S. Ware, Tottenham, on Tuesday, and which is to be maintained throughout the season, forming a permanent attraction in the conservatory. Very prominent in the group were numerous spikes of *Gladiolus* of the ramosus section, the varieties of which are worthy of culture in every garden. Lilies also were admirably represented, particularly the yellow *L. colchicum*, which was in first-rate condition, the bright red *L. pomponium verum*, the white *L. Martagon album*, and many others. The profuse-flowering *Spiraea japonica aurea reticulata* with its feathery panicles of creamy white flowers was also attractive, and a bold Star of Bethlehem with large white flowers, *Ornithogalum latifolium*, was especially fine. Innumerable other charming plants were included, and the group fully deserved the silver-gilt Flora medal awarded for it. Equal honours were adjudged to Messrs. Kelway and Son, Langport, for a most extensive and handsome collection of Pæonies, Pyrethrums, and choice hardy flowers, the two former comprising some grand varieties, the best of which were enumerated in the report of a previous meeting. Messrs. Barr & Son, Covent Garden, were awarded a silver-gilt Banksian medal for a large beautiful group of hardy flowers, amongst which Irises of the Spanish type predominated, a great number of five varieties being included. A group of Carnations similar to that at the preceding meeting was also included in Messrs. Barr's contribution. Bronze medals were awarded to the following exhibitors:—Messrs. H. Cannell and Sons for Pelargoniums, a choice collection of Verbenas, Pæonies, and Pyrethrums; Mr. John House, Peterborough, for collections of Rose blooms, chiefly Teas and Noisettes, together with a box of the distinct bronzy orange William Allen Richardson, which is becoming so great a favourite, two pretty Moss Roses—Blanche Moreau, small, neat, white buds, and Baronne de Wassenaar, much larger, purplish crimson; the New Plant and Bulb Company, Colchester, for a group of Japanese Maples with varied and brightly coloured foliage; and to Messrs. Paul & Son for a small choice group of hardy plants.

Special Prizes.—Messrs. Sutton & Sons, Reading, provided six prizes, in two classes, for a brace of Melons and six varieties of Lettuces. In the Melon class a little difficulty occurred owing to the wording being not sufficiently clear. The prizes were offered, "For the best brace of Melons, to include Sutton's Scarlet Invincible, Sutton's Masterpiece, or Sutton's Hero of Lockinge," and the Judges awarded the first prize to Mr. J. Fry, The Gardens, Haydon Hall, Eastcote, who had two fine beautifully netted fruits of Hero of Lockinge, the other prizes being withheld. Attention was, however, subsequently called to this, as not being in accordance with the intentions of the prizegivers, and the awards were then given as follows:—Mr. J. Douglas, gardener to F. Whitbourn, Esq., Great Gearies, Ilford, first, for Hero of Lockinge and Scarlet Premier, both very good; Mr. H. Eldridge, The Gardens, Chesterford Park, Saffron Walden, second with Masterpiece and Hero of Bath; Mr. Fry being placed third with Hero of Lockinge, as already mentioned. The prizes for Lettuces were won by Mr. C. J. Waite,

gardener to Col. W. P. Talbot, Glenhurst, Esher, who was first with Sutton's Superb Green and Green Cos, Veitch's Exhibition White Cos, Victoria White Cos, and Hardy White Dutch Cabbage. These Lettuces were not only solid good specimens, but they were set up to much better advantage than the others. Mr. W. Meads, The Gardens, Beckett Park, Shrivenham, and Mr. Richards, Somerley Park Gardens, Ringwood, Hants, were second and third respectively.

FRUIT COMMITTEE.—H. J. Veitch, Esq., in the chair. There were several seedling Melons exhibited for certificates, but none of them was of sufficient merit to secure an award. Mr. George Taylor, gardener to Sir Charles Isham, Lamport Hall, sent a small red-fleshed variety called Sir Charles, of good quality, but not good enough. Mr. A. R. Bailey, Wilton Vale House, Frome, sent Blenheim Orange, well grown, but not ripe. It was awarded a letter of thanks. Mr. William Iggulden, Marston Gardens, Frome, sent a Melon called Marston House, which was not ripe. Messrs. Rivers & Son of Sawbridgeworth sent fruit of Lord Napier Nectarine, remarkably well grown, large, and of delicious flavour. A cultural commendation was awarded. Mr. George Paul exhibited a plant of Pauline Strawberry, which was described and figured in this Journal, and a first-class certificate was awarded. Mr. T. Laxton sent a dish of "The Captain" Strawberry, well grown and quite ripe, from the open ground, but it was passed as being deficient in flavour. A recommendation was sent to the Council proposing that a Pear Congress be held at Chiswick on the 21st of October, and the following Committee was appointed in advance:—G. Bunyard, Dr. Hogg, J. Lee, J. Roberts, J. Woodbridge, H. Veitch, and A. F. Barron, Secretary.

FLORAL COMMITTEE.—Present, Mr. John Fraser in the chair, and Messrs. J. Douglas, James O'Brien, H. M. Pollett, Harry Turner, J. Dominy, Charles Noble, Thomas Baines, W. Wilks, H. Herbst, W. Bealby, H. Bennett, H. Cannell, Dr. Maxwell T. Masters, H. Ballantine, W. B. Kellock, J. Child, J. Walker, Amos Perry, F. R. Kinghorn, and J. James.

Messrs. J. Veitch & Sons, Chelsea, exhibited several new plants, which were certificated, and are described at the end of this report; two others, not so honoured but very notable, were *Euonymus japonicus* Silver Gem, which has neat leaves, with a broad distinctly defined margin of silvery white; and *Fagus sylvatica* tricolor, the leaves of which are edged with bright rose. Messrs. Sander & Co., St. Albans, had some very pretty and varied forms of *Odontoglossum*, several of which were certificated. Mr. Chadwick, Ealing, showed a plant of *Stanhopea tigrina*, with two large richly coloured flowers, strangely mottled. Mr. Little sent a variety of *Cattleya Mendeli*, named *rosea superba*, finely coloured; and Mr. Clay also had a variety of the same species, named *superba*, but much lighter in colour. The New Plant and Bulb Company, Colchester, showed a variety of this *Cattleya* named *delicatissima*, the flowers of which are nearly white, having a slight yellow tinge in the lip. Spikes of the white *Veronica salicifolia* and several hardy plants were also shown by the same firm. Colonel Taylor, The Coppins, showed some handsome *Pæonies*, varied in colour and extremely full. H. Buchan, Esq., Southampton, sent a spike of *Odontoglossum velleum*, the flowers bright yellow barred with brown, neat and pretty. Mr. C. Turner had a small group of Show and Fancy *Pelargoniums*, comprising the following:—Show Varieties—Comet, scarlet and maroon; Cygnet, rose lower petals, blush upper petals; Lily, similar, but with the colouring reversed. Fancy Varieties—Mrs. Langtry, lower petals white, the upper rose; Mars, white centre, rose-purple margin; and Penelope, white centre, bright purplish pink in colour. Mr. W. Rumsey had plants of *Pelargonium candidissimum plenum*, double, white and pure. Mr. W. Stacey, Dunmow, showed a stand of his new *Verbena Hamlet*, deep red, very fine flower, and rich in colour.

CERTIFICATED PLANTS.

Anguloa Ruckeri (Sir Trevor Lawrence, Bart.).—A handsome specimen with twelve large flowers, the dark red spots upon the inner or upper surface of the sepals and petals being very numerous, and having a curious appearance on the yellowish ground tint.

Cymbidium Parishii (Sir Trevor Lawrence, Bart.).—A charming neat-flowered form, the sepals and petals pure white, wax-like in substance, the lip stained with yellow in the centre.

Thunia Veitchii (Veitch).—A hybrid between *T. Marshallii* and *T. Bensoniæ*, the seed of which were sown in April, 1881. The sepals and petals are pure white, the lip being veined with mauve and tinged with yellow. It is extremely pretty, and will become a favourite.

Masdevallia Gairiana (Veitch).—A hybrid between *M. Veitchiana* and *M. Davisii*, and showing the characters of the two parents in a remarkable degree, the flowers being yellow tinted with red.

Styrax japonicus (Veitch).—An attractive Japanese shrub with white drooping flowers of five oval petals. They are produced freely from the axils of the ovate-lanceolate leaves, and have a pretty appearance.

Olearia macrodonta (Veitch).—A New Zealand shrub, with lanceolate coarsely serrated leaves $1\frac{1}{2}$ to 2 inches long, and white on the under surface. The flowers are white, Aster-like in form, quarter of an inch in diameter, and produced in dense corymbs.

Eremurus aurantiacus (New Plant and Bulb Company).—A very handsome plant, with dense cylindrical spikes of small bright yellow flowers and long stamens. The spike was over 12 inches long and crowded with flowers the whole length, but as they open from the bottom upwards it appears that only about half the flowers are expanded at one time.

Odontoglossum Mulus Germinyanum (Sander).—A pretty variety, pale yellow with dark chocolate blotches and bars.

Odontoglossum Alexandræ Johnsonianum (Sander).—White and purple ground with numerous brown spots.

Odontoglossum elegans Aliciæ (Sander).—Sepals and petals narrow, white, with rich brown spots and dots.

Odontoglossum Brymerianum.—A handsome variety of fine form, white and purple ground with brown spots and blotches.

Candytuft Empress (R. Dean).—A superb variety with large pure white flowers in long dense spikes.

Rose Princess Beatrice (H. Bennett).—A pedigree seedling variety with neatly flowered bloom of good substance, delicately tinted with yellow, in a young state slightly tinged with pale rose, the petals revolute. Very fragrant. A pretty addition to Mr. Bennett's charming Roses.

Pelargonium Thisby (Wiggins).—A show decorative variety of the Eastern Emperor style, but superior to that, the white lower petals being clearer, and the upper purple-tinted ones richer.

SCIENTIFIC COMMITTEE.—Sir J. D. Hooker in the chair.

David Douglas.—Sir Joseph Hooker showed a portrait of the famous botanical explorer, to whom our gardens are indebted for so many fine hardy plants.

Honey Glands in Cattleya.—Dr. Masters read a communication from Mr. Burbidge relating to the presence of honey glands on the sepals of *Cattleya Mendeli*—a circumstance not commonly known.

Arthrotaxis selaginoides.—Dr. Masters showed, on the part of Mr. Noble, branches of this plant provided with cones.

Tea from Jamaica.—Sir J. D. Hooker alluded to a consignment of Tea which he had received from Jamaica, the first received from that island, and the produce of seed sent from Kew to Jamaica some twenty years since. The quality was reported as very good.

Action of Frost.—Specimens of espalier Apples from Rev. H. H. D'Ombraïn were shown, in which the young growths were browned and withered. Dr. Masters stated that he had recently received numerous specimens of various trees similarly affected. In the absence of other visible cause, he attributed the effect to the action of frost on the young growing shoots.

Aranthus leonis.—Mr. W. G. Smith sent a sketch of the flower of the new *Aranthus* (*Angræcum*) *leonis*, and called attention to the long and remarkable spur, which is abruptly twisted and the end upturned. "In *Angræcum sesquipedale* a moth was found with a proboscis long enough to reach the nectar at the bottom of the straight or only slightly curved spur. How could a moth get its proboscis to the base of a spur like the one of which I send a sketch? It could only be done with inconvenience to the moth, and might lead to a damage of the delicate proboscis. If I may be allowed to say so, the flower appears to me to be twisting its spur at the moth in a most defiant and irritating manner. All the spurs are curved in the same style."

It was pointed out that the twisted state of the spur might be advantageous rather than otherwise, as affording leverage to the moth.

Corn Mildew.—Mr. Smith sent a drawing of the fungus of corn mildew, *Puccinia graminis*, *Pers.*, growing in company with the fungus of smut *Ustilago carbo*, *Tul.*, within the membranes of the fruit or grain of Oats. He says, "The fungus was detected as drawn in the very young fruit, and the fungus did not gain access to the fruit from the exterior, but from the interior of the host plant in company with the smut fungus. I have the original materials and a microscopic slide with the fungi *in situ*."

"The meaning will be quite obvious to all botanists, and proves that corn mildew can be (and, as I say, is) hereditary in corn. By hereditary, I mean that the germs of the disease can be transmitted in the fruits or grains."

"The district in which I write (Dunstable) is purely agricultural. Corn is one of the chief products, and corn fields are spread over thousands of acres. The corn is now much rusted. This rust, or *Uredo*, the early state of *Puccinia*, appeared on the first leaves of this corn in spring and early summer. The amount of *Uredo* is perfectly inconceivable."

"As for *Barberry* bushes and *Barberry* blight, although I have known this district well all my life and studied its botany, I have never once seen a wild *Barberry* bush in the whole county. Abbot only gives two localities in the county of Beds, and Saunders only one. Mildew is always in its worst form near hedges and trees, and bad patches are always seen where the ground has been manured with mildewed straw from stables."

"One of the reasons why mildew is so bad here is found in the fact that all the best unmildewed straw is very carefully selected for the manufacture of hats and bonnets, and all the mildewed material finds its way to the fields, where it reproduces the disease."

"I do not say, and never have said, that it is impossible for the fungus of *Barberry* blight to infect corn with *Uredo*; all I say is that nothing like proof has yet been adduced of a genetic connection between *Æcidium Berberidis* and *Puccinia graminis*."

"The corn fields in this district conclusively show that *Barberry* bushes are unnecessary for the production of *Uredo* and *Puccinia*, as such bushes are virtually unknown."

SCENTED-LEAVED PELARGONIUMS.

WE do not hear much of these, but they deserve general attention and culture for many reasons. There is no other class of plants with which I am acquainted which bear leaves so delightfully fragrant as these. They are evergreen and highly pleasing at all times. Some are variegated and others have their leaves beautifully cut, assuming the appearance of Ferns. They mostly produce small flowers, very pretty, but not showy. They are especially worth growing for their leaves to take the place of Fern fronds and other green foliage amongst cut flowers. Nothing can equal them in all arrangements where elegant green and sweet-scented leaves are desired. A fresh green and a rich fragrance are desirable accompaniments in the majority of vase-filling for rooms and cut-flower arrangements everywhere; and while these *Pelargoniums* supply this to an uncommon extent they possess another quality of great value, and that is the unusually long time they remain fresh after being cut. We have often kept the leaves and sprays in rooms for eight days without their showing signs of decay; and hot dry atmospheres or draughty positions in which cut flowers are often situated, and in which Fern fronds wither in a few hours, have no influence on these *Pelargoniums*. They are valuable for cutting in summer, but they are doubly so in winter, when choice greenery is often scarce, and it is difficult to deal with tender plants. A dozen or two good plants will keep up a supply all the year round.

The old Pheasant's-foot is one of the best known varieties. *P. radula* and *P. radula major* are two very fine forms. *P. denticulatum majus* and *P. filicifolium odoratum* are very graceful. *P. quercifolium* is the Oak-leaved variety, and is not so useful as some. *Duchess of Devonshire* is

very fragrant. Lady Plymouth is beautifully variegated. Lady Scarborough has all the appearance of the leaves of the Fern-leaved Parsley, and is very sweet. When the leaves of these are pressed in the hand they become more highly fragrant.

Plants propagated now will remain useful until this time next year, or longer if desired. Young plants generally furnish the best shoots and finest developed leaves, but the plants may be kept on for several years and never fail to supply large numbers of side shoots. In beginning to propagate them the little side shoots should be taken with a small piece of the old wood attached, and this should form the heel of the cutting. They may be inserted singly into small thumb pots, or a number of them may be kept round the edge of a 6-inch pot. Any sandy soil will do for propagating, but they are benefited by the help of a gentle bottom heat, and they should always have this if it can be supplied. We prefer putting the cuttings singly in the smallest pots, and then shifting them without breaking the young roots. This is the quickest way of obtaining large plants, as no check is given in repotting. As soon as a number of roots have been formed the cuttings should be withdrawn from the influence of the bottom heat and be placed in an intermediate temperature. Here they will soon grow rapidly, and may be repotted: 3-inch or 4-inch pots are large enough for the plants during their early days. They are placed in them from the cutting pots, and remain there until they have become bushy little plants. They are then shifted into 6-inch pots, and it is in this size that they become useful. At this potting good loam, a quantity of Beeson's bone manure, and a liberal dash of sand should form the rooting mixture, and they will do admirably in this and in the 6-inch pots until they are a year old, but they must not be kept in a hot place constantly, as they luxuriate in a cool temperature. A sudden change from a hot place to a cold one should never be allowed, but after the first potting they should be gradually withdrawn from the heat, until by the end of May they are placed in a cool frame. There they may remain all summer, cutting from them as may be necessary, and pinching the points out of each of the leading shoots to induce a number of smaller ones to be emitted. They will soon come, and should be encouraged to grow for winter cutting. In the autumn, or by the end of September, the whole of them should be transferred to the greenhouse or conservatory, where they will be safe from frost and have the benefit of a genial atmosphere.

Apart from the large quantity of useful foliage which may be cut from them throughout the whole of their growth, it will be found that they form very serviceable decorative plants in the conservatory. I cannot advise when old plants should be thrown away and new ones taken on, as the cultivator may best decide this by the condition of the plants, but the present is the best time to propagate, and a stock of healthy plants should always be kept on hand. Sometimes we have found green fly attempt to settle on the plants, and they are very partial to the finer leaved forms, but fumigating, or, better still, timely syringing will always prevent any trouble from this source. Old plants should be repotted every spring, but this may be done without increasing the size of the pot very much, as the old soil may be reduced and fresh material take its place.—J. M.

HORTICULTURAL FÊTE AT YORK.

THE twenty-seventh annual Exhibition was held on the 17th, 18th, and 19th inst. in the Bootham Grounds, and was as usual a great success. Six large tents were well filled, and the display of Pelargoniums was a remarkable one—probably the finest ever seen. In the class for ten stove and greenhouse plants in flower and six fine-foliage plants the first prize of £20 was taken by Mr. Letts, gardener to the Earl of Zetland, for really grand plants, the most noticeable of which were *Ixora Williamsi*, *Stephanotis floribunda*, a superb *Pimelea mirabilis*, an *Anthurium Schertzerianum* with nearly 100 spathes, a grand *Erica Cavendishiana*, an *Ixora coccinea* in fine condition, *Azaleas*, *Cycas revoluta*, and a marvellous *Croton Queen Victoria*. High-class cultivation was apparent in this very fine collection. Mr. Cypher of Cheltenham was second with excellent examples of *Clerodendron Balfourianum* and *Allamanda nobilis*. Mr. W. Dove, York, was placed third. In the class for six stove and greenhouse plants in flower Mr. Letts was first with very fine specimens of *Clerodendron Balfourianum*, *Anthurium Schertzerianum*, and two *Crotons*. Mr. James Noble, gardener to T. Fry, Esq., M.P., Darlington, was second, and in his group were two fine *Ericas*. For three stove and greenhouse plants in flower Mr. Lumley, gardener to W. N. Champion, Esq., Halifax, was first, and in this collection was a very fine *Imantophyllum miniatum superbum* and a large specimen of *Utricularia montana* in fine condition, with about thirty spikes of flowers. Groups of plants were plentiful and good. In the class for a group not exceeding a space of 250 square feet, Mr. McIntyre, gardener to Mrs. Gurney Pease, Darlington, was placed first; Mr. R. Simpson, nurseryman, Selby, second; and Mr. William Dove, York, third, all these groups being well set up. Messrs. A. Simpson & Sons, nurserymen, York, contributed in this class a bright attractive group, in which there was a preponderance of flowers. In Class 3, a group of plants not exceeding 150 square feet of space, Mr. Noble was first with a tasteful group, in which a lot of well-coloured *Crotons* told, the whole fringed with Maiden-hair Ferns and the variegated *Panicum*; second, Mr. McIntyre; third, Mr. Lister, gardener to T. S. Brogden, Esq., York. For six ornamental plants Mr. McIntyre was placed first with a grand even lot of plants, consisting of a splendid *Cordyline indivisa*, *Dasyllirion glaucum*, *Croton majesticus*, *Cycas revoluta*, *C. circinalis*, and *Croton Queen Victoria*; second, Mr. Noble with fine plants; third, Mr. Cypher, also good, which included finely coloured examples of *Crotons angustifolius* and *Sunset*. Excellent exotic Ferns were staged, Mr. W. Dove taking first honours for six; Mr. Nash, gardener to Capt. Starkey, York, second; and Mr. Noble third. For three exotic Ferns Mr. Noble was first with a very fine *Microlepia hirta cristata*, a *Davallia Mooreana* 6 feet through, and a wonderfully good *Goniophlebium subauriculatum*. The hardy Ferns were unusually fine, Mr. W. R. Robin-

son's first-prize plants of six and ten especially so, and this gentleman exhibited also a mass of *Trichomanes radicans* in fine character. Other exhibitors also staged strongly. Cape Heaths, now rarely seen good, were well represented by Mr. Letts's first-prize group of three, and Mr. Cypher's second-prize plants. Tree Ferns were well shown, Mr. W. Dove taking first honours. The collections of bedding plants were not up to the usual standard here, but were still creditable.

In Orchids, Dr. Ainsworth of Broughton (Mr. E. Mitchell, gardener) took first prizes for eight and four plants; amongst them were a very fine *Phalænopsis grandiflora* in a pot, *Dendrobium suavissimum*, *Saccolabium præmorsum*, and *Phalænopsis amabilis*. Mr. Cypher was second for eight, and W. N. Champion, Esq., third. For four Orchids Mr. C. Rollinson, gardener to W. Bateman, Esq., Harrogate, was second; and Mr. Eastwood, gardener to Mrs. Tetley, Leeds, third. For single specimen Orchid Mr. Letts was first with a fine *Aerides odoratum*; and Mr. McIndoe, gardener to Sir J. W. Pease, Bart., M.P., Hutton Hall, second with a very fine *Odontoglossum vexillarium*. The *Croton* classes were well filled, some grand plants being staged. Mr. Letts led with *Crotons majesticus*, *Morti*, *variegatus*, and *Warreni*, well grown, highly coloured, exceedingly fine plants. Mrs. Gurney Pease came second with smaller plants, still fine in character and of good size, consisting of *interruptus*, *Chelsoni*, *Andreanus*, and *Warreni*. Mr. Methven, gardener to T. Lange, Esq., Gateshead, was a good third in size and growth but deficient in colour. The *Gloxinias* were good throughout, especially the first and second-prize plants staged by Mr. W. N. Champion (first) and Mr. Sunley, gardener to B. Hemsworth, Esq., South Melford (second). The *Calceolarias* were also very good. *Tuberous Begonias* were not well represented.

The strong feature of the Exhibition was in the wonderful display of Pelargoniums staged, which called forth the admiration of everyone. Mr. Eastwood, gardener to Mrs. Tetley, Leeds, was strongly to the front, taking the first prize for twelve plants; Mr. McIntosh, gardener to J. T. Hingston, Esq., second; and Mr. Charles Rylance, Ormskirk, third. These were altogether a grand lot, Mr. Eastwood's plants standing out prominently. In the class for six plants Mr. E. Bridge, Liverpool, was placed first with six well-finished highly cultivated plants; Mr. Eastwood a close second, his training being stiffer and more formal; and Mr. McIntosh third, with an extra prize to Miss Steward, Bishopsthorpe. In the class for three Pelargoniums Mr. Eastwood was first, Mr. McIntosh second, and Mr. Bridge third. Mr. Eastwood was first for six as well as three Fancy Pelargoniums, and his plants were fully up to the old Slough standard of growth. Four collections of twelve Zonals, three of them marvellously fine plants from 3½ feet to 4½ feet through, were staged, the first prize going to Mr. Eastwood, second to Messrs. Pybus & Son, Ripon, third to Mr. McIntosh. Six collections of six Zonals were staged, Mr. Eastwood taking the first place, Mr. McIntosh second, Miss Steward third, and Mr. F. Humphries, New Linthorpe, fourth. These were all very fine. For six double Zonals Messrs. Simpson & Sons were placed first, and Mr. Eastwood second. Mr. Eastwood's high-class cultivation throughout constitutes him the champion Pelargonium grower of the day. Fuchsias were not so good as usual. Mr. A. Cole, gardener to J. Broome, Esq., of Didsbury, near Manchester, staged six superb *Nepenthes*, large plants in fine health and colour. These consisted of a grand plant of *Mastersiana*, a fine *Hookeri*, *Williamsi*, *sanguinea*, *Morganæ*, and *anerleyensis*. Mr. McIntyre took the second prize. Bronze and Tricolor Pelargoniums have always been wonderfully good at York, and on this occasion the Bronzes were fairly well represented, J. Billesby, Esq., taking the first prize for six and three with very fine specimens. A few good Tricolors were staged, but there was a dulness and want of colour in many of the plants staged.

There was a large display of Roses in pots. For six plants in pots Mr. Charles Rylance was first, and Messrs. Jackson & Co., Bedale, second, the same firm being also first for nine Roses in pots. For fifteen plants in not more than 8-inch pots Messrs. Pybus & Son were first, and Messrs. Jackson and Co. second. For six plants in pots for amateurs only Miss Steward was first, Mr. Hemsworth second, and Mr. Eastwood third. In the class for forty-eight varieties of cut blooms of Roses Mr. House of Peterborough was first; Mr. Henry May, Bedale, second with an even good lot, but smaller blooms; Mr. Eastwood third. For thirty-six blooms Mr. House was again first, Mr. May second, and Messrs. Jackson & Co. third. For twenty-four blooms, first Mr. House, second Messrs. Jackson & Co., third Mr. H. May. In Mr. House's stands were fine blooms, *Madame Gabriel Luizet*, *Reine Marie Pia*, *Lady Mary Fitzwilliam*, *Souvenir de Thérèse Levet*, *Mons. E. Y. Teas*, and *Marquise de Castellane*. *Lady Mary Fitzwilliam* was also fine in other stands. Mr. John House staged three blooms of "Miss House," a new Rose of promise, resembling *Captain Christy* in colour, as well as a fine box of *William Allen Richardson*. Mr. McIndoe took the first prize in each class for twelve bunches and six of exotic flowers, chiefly Orchids, both grand lots; also for a collection of twelve cut herbaceous plants.

There was a good display of fruit. In the collection for eight varieties Mr. Miles, gardener to Lord Carrington, was first with black and white Grapes, a handsome *Queen Pine*, a fine *Hero* of Lockinge Melon, *Hale's Early Peach*, *Elrage Nectarine*, *Negro Largo Fig*, and *Black Circassian Cherry*, very fine. Mr. McIndoe came second with a fine collection, which included a handsome "Best of All" Melon; third Mr. Westcott, Raby Castle. For six varieties, Mr. McIndoe first, Mr. Dawes, the Gardens, Temple Newsam, second; Mr. Westcott third. For four varieties, first Mr. Clayton, Grimston Park; second Mr. Leadbetter, gardener to A. Wilson, Esq., Hull; third Mr. Wallis, gardener to Sir H. M. Thompson, Bart., Kirby Hall. Some good black and white Grapes were shown, and for three bunches of *Black Hamburgs*, Mr. Alsopp, gardener to Lord Hotham, was placed first, and Mr. Sleightholme, gardener to T. W. Dymond, Esq., Barnsley, first for whites. Several excellent Melons were staged; Mr. Hare, gardener to R. H. C. Nevill, Esq., Grantham, taking the first place with a capital scarlet flesh named "Scarlet Hybrid." Mr. McIndoe exhibited a basket of very fine Tomatoes. In the class for eight varieties of vegetables Mr. Miles, Wycomb Abbey, set up a very first-rate lot, admirably staged; Mr. McIndoe second; and Mr. Short, gardener to Arthur Pease, Esq., M.P., third.

We are only able to notice some of the leading features, as this exhibition is always a very great one, and this year especially so. The second day brought over twenty thousand visitors, and the usual outdoor attractions were

added. The Committee is a very strong one, including a large portion of the City Fathers, with Mr. Alderman Terry at their head, a courteous and greatly esteemed Chairman, and with the Lord Mayor as President of the Society. All work with a will and in thorough harmony, and they have valued help in their Secretary from the beginning, Mr. John Wilson.

PÆONIES AND SPANISH IRISES.

MESSRS. ANT. ROOZEN & SONS, Overveen, Haarlem, have sent us two beautiful collections of Pæonies and Spanish Irises, comprising a large number of varieties differing greatly in their colours. The Pæonies are remarkably handsome, huge globular flowers like enormous Roses, and some, too, possess in a marked degree a Rose-like fragrance. All are beautiful, and it is not surprising that they are gradually becoming such general favourites in gardens. For the border they are invaluable, and at this time of year furnish abundance of their imposing flowers, and fill the air with their powerful odours.

Some of the best of the varieties were the following :—

SELECT PÆONIES.

Artemise.—Very full, warm rosy crimson, exceedingly fragrant, and strangely suggestive of the old Cabbage Rose.

Virginie.—Extremely full, delicate pale pink, fragrant.

Grandiflora superba.—Outer petals crimson, inner petals smaller, pale pink, and white.

Madame Jaquin.—Delicate blush white, full and pretty.

Eugene Verdier.—Full handsome flower, petals broad, handsome, pink and white, powerfully fragrant.

Charles Verdier.—Broad white outer petals, inner ones narrow, sulphur yellow, styles red.

Fideline.—Rich crimson, somewhat like *Artemise*, and similarly fragrant.

Madame d'Hair.—Pink and white, petals broad, very full.

Madame Vilmorin.—Crimson pink, broad petals, full.

Henri Demay.—Delicate blush and white, very large, full, and handsome, fragrant.

Dr. Caillot.—Intensely rich crimson, one of the brightest-coloured varieties, solid globular flower, very handsome.

Lucrece.—Broad outer petals, inner very narrow, white, fragrant.

Madame Calot.—White with a slight pink tinge, very dense and globular, fragrant.

Comtesse de Bresson.—Outer petals pink, broad, inner narrow, very dense, white, fragrant.

L'Illustration.—Similar to *Artemise*, rather more rosy in colour.

Georges Cuvier.—Outer petals broad, inner narrow, dense, rose pink.

Princess Galetsin.—Blush white, broad outer petals, inner narrow and white.

Papaveriflora.—Broad outer petals, white, slight red streaks in the centre.

SPANISH IRISES.

These also possess a surprising number of tints, and are powerfully fragrant. Several of the blue and yellow selfs are perhaps the most pleasing, the others containing more or less of a bronzy tint. The following are select varieties :—

La Hautesse.—Pale yellow falls, blush yellow standards.

Gladieuse.—Rich orange self, very fine.

L'Admirallon.—Purple, gold, and bronze, a beautiful combination of colours.

Indicrants.—Clear yellow and orange.

Incomparable.—Lilac blue, with orange blotch on the falls.

Vulcan.—Rich purple blue, bronze and orange falls.

Dorotti.—Blue standards, bronze and orange falls.

Bazaine.—Purple with orange blotches.

Dr. Schaepman.—Clear pale yellow, beautiful.

Fénélon.—Blue, with orange blotches.

Olympia.—Pale yellow falls, pale blue and white standards.

Prinee d'Asturie.—Rich blue, bronze, and orange.

Diana.—Uniform clear bright yellow, very handsome.

L'Unique.—Lilac blue, orange ridge on falls.

Venus.—Purple, bronze, and orange.

L'Ornement.—Very distinct, of a peculiar purplish bronze tinged with an orange blotch in the falls.

Henrietta.—Blue and yellow.

Paul Grey.—Orange falls, white standard, beautiful.

La Dame Blanche.—White with an orange ridge in broad falls, very beautiful.

Desdemona.—Rich blue standards, bronze falls with an orange blotch.

British Queen.—Similar to *La Dame Blanche*, rather purer white, large flower, but not such grand falls.

LLANDAFF HOUSE,

THE residence of the late W. C. Luard, Esq., stands on the summit of a rising ground adjoining the small but ancient city of Llandaff, and within a short distance of the Cathedral, which stands at a much lower level on the banks of the river Taff. Llandaff, though it bears the name of "city" is little more than a country village in size, yet it is of great antiquity, and travellers come from far and near to see the Cathedral, which was restored some few years since. The situation of Llandaff House is one of great beauty, and commands an extensive view for miles on all sides. The grounds are finely furnished with magnificent old trees

that have stood the storms of more than a hundred winters. Mr. Luard was extremely fond of gardening, and spared no expense in beautifying the grounds with the choicest kinds of trees, shrubs, and flowering plants that could be had, and in stocking the conservatory and plant houses with the best and newest kinds in cultivation. We have seen few gardens of its size laid out with the skill that is displayed on the grounds there.

The dwelling house, stables, coach houses, &c., stand close to the turnpike passing through the city; and the pleasure grounds, forcing and plant houses, and the principal gardens lie behind the house, and are secluded from another public road that passes at right angles by large trees and shrubberies. The orchard, which contains a large collection of the best varieties of Apple and Pear trees in cultivation, and a good-sized kitchen garden for the stronger-growing kinds of vegetables, Gooseberry and Currant bushes, Strawberries, &c., is on the opposite side of the road. The orchard trees, which were planted only a few years since, have grown vigorously and are well set with fruit. The Gooseberry and Currant bushes are loaded to the ground with heavy crops. The birds, which have done so much mischief to Gooseberry bushes in many places this season by picking off the buds, have done them no harm here, while in some places not more than two miles distant the bushes have been completely ruined, and whole plantations of them had to be dug up and burned. A good conservatory, both for growing and showing off plants to advantage while in flower, is attached to the house, and is entered by a door from the library. The back wall of the conservatory is covered with Selaginellas, Ferns, and other plants growing in virgin cork; and the centre and side stages contain a general collection of stove and greenhouse plants, amongst which are good specimens of Palms, Tree Ferns, Fuchsias, Phormiums, Pelargoniums, Cinerarias, Calceolarias, &c. The roof is partly shaded with *Clematis indivisa lobata*, which flowers freely, and at the same time affords a partial shade to the plants beneath.

On the grass lawn, in front of the conservatory adjoining the house, is a neat geometrical design for bedding plants. It was filled with spring-flowering plants at the time of our visit, which will be removed in due time for the usual summer bedding plants. Clumps of hybrid Rhododendrons, Ghent Azaleas, hardy Heaths, and other flowering shrubs, are planted at different points with good effect, while single specimens of the finer kinds of Conifera are growing in suitable places here and there. Amongst these are large plants of *Thuja Lobbii*, *Thuja dolabrata variegata*, and *T. borealis*; *Cupressus Lawsoniana* in great variety, *Wellingtonia gigantea*, *Araucaria imbricata*, *Retinospora pisifera*, *R. plumosa*, *R. obtusa aurea*, and the curious-growing *R. filifera*. Conspicuous amongst the deciduous trees are large Copper Beeches, Walnuts, variegated Sycamore, and the lovely Tree of Heaven (*Ailantus glandulosa*), which resembles a gigantic Stag's horn Sumach, with its large pinnate leaves more than 2 feet long. It is one of the best of ornamental trees for park or lawn, and should be planted more extensively in this country than it is. The Judas Tree (*Cercis Siliquastrum*) there is the largest we have seen anywhere. It produces great quantities of purple pea flowers from little sprigs which come out of the hard trunk and branches of the tree. It is a beautiful tree when in flower, and we wonder why it is not oftener met with in our gardens and pleasure grounds. There are also some large Ilex Oaks, and a particularly fine Strawberry Tree (*Arbutus Unedo*). The branches of the latter grow close down to the ground, and it measures about 150 feet in circumference. It is a beautiful sight when covered with its red ripe fruit resembling Strawberries, which afford abundant food for birds during the time the fruit lasts.

A large shrubbery with herbaceous border in front serves to screen the kitchen garden from the house and pleasure grounds. The kitchen garden is laid out in quarters, and the gravel walk edged with boxwood. The fruit trees, Peas, Plums, and Cherries on the walls, and the standard Cherry trees in the quarters, pyramid Apple and Pear trees in the borders, scarcely ever fail to carry good crops of fruit. All the quarters were well cropped with the different kinds of vegetables, and were in good order.

The plant and forcing houses lie to the left of the lawn away from the view of the house, and between them and it there is a high Peach wall covered with healthy trees bearing a good crop of fruit. The grounds adjacent to the forcing houses are laid out in beds, which are planted with fine varieties of shrubs, herbaceous and bedding plants, and a good collection of single Pæonias. The first range of glass consists of a large lean-to intermediate plant house and plant stove. Vines bearing a good crop were trained thinly up the rafters of the former, and a good collection of plants were growing on shelves and stages beneath, including some fine Adiantums, and Gloxinias, and Tuberous Begonias, finely flowered. The majority of the plants here could scarcely be surpassed for health and vigour. The stove contained large specimen Crotons, *Cibotium regale*, *Aralia elegantissima*, besides a good collection of smaller plants for table and conservatory decoration. In an alcove at the end of the stove there is a beautiful fountain and rockery. The fountain plays from the centre of a clear pool of water. The back wall is covered with *Ficus repens*, and Ferns and Mosses cover the rockery.

The next range, which is half-span, consists of a Muscat house, Melon house, Pine stove, Fern house, late vinery, and Cucumber house. The Vines in the Muscat house are confined entirely to the inside border, which is heated by means of hot water in pipes. The heat is thoroughly under command, and can be regulated by valves to any degree required. The Vines were ripening a good crop of excellent fruit. Mr. Woodward, the gardener, informed us that the Grapes coloured better and were richer in flavour than those grown in unheated borders. Most of the houses in this range have flat stages at the back for growing plants, and the stage in the Muscat house was filled with a collection of the best kinds of

Caladiums. The varieties grown in the Melon house were principally Eastnor Castle, and one raised in the place. The plants were clean and vigorous, and well set with fruit. The bed in the Pine stove was filled with fruiting plants, consisting of Queens, Black Prince, Prince Albert, and Smooth Cayenne, and the stage at the back with highly coloured specimen Crotons, amongst which were fine plants of Wiesmannii and majesticus, and a good plant of Stephanotis in full flower.

The Fern house contained some of the largest specimen Ferns we have seen for some time. A *Gymnogramma chrysophylla* was measured to satisfy our curiosity, and was found to be 6 feet in diameter; *Adiantum farleyense* 5 feet, *A. tenerum* 7 feet, *Asplenium nidus* 7 feet, besides a collection of smaller plants of the best sorts. The late vinery was planted with Lady Downe's Seedling, Gros Colman, and Black Alicante. The Vines were all young and promising. The stage at the back was filled with plants, amongst which was a very fine specimen *Bougainvillea glabra* trained in balloon fashion.

The Cucumber house is used in the early spring for propagating and keeping young bedding plants, and for growing Cucumbers during the summer months. The potting sheds, fruit room, and seed room are enclosed in a yard close to the house. The yard is handy for keeping pots, soils, and plants that have made their season's growth, and for hardening off bedding plants. There are two small span-roofed houses in the yard. One is used for growing Tea Roses, trained on the roof, and Camellias underneath; the other for Peaches and storing plants in the winter. The houses were erected and heated by Messrs. Weeks of London, and have given entire satisfaction. Mr. Woodward has had charge of the gardens for the last twelve years, and every department bears testimony to his skill, taste, and assiduous attention to details. It gives one pleasure to visit a place so well kept.—A. P.

HORTICULTURAL EXHIBITIONS.

The following list of Shows, with the dates, may possibly be useful for reference.

- June 25.—Walton-on-Thames.
 „ 27.—Canterbury. Brockham (Roses).
 „ 28.—Antwerp (cut Roses), (two days).
 „ 29.—Maidstone (Roses).
 „ 30.—Bagshot (Roses). Colchester.
 July 1.—Royal Botanic Society's Evening Fête. Croydon. Ryde. Farningham
 Cardiff. Farnham (chiefly Roses).
 „ 2.—Reigate (Roses). Hitchin. Bath. Sunbury.
 „ 3.—Tuubridge Wells.
 „ 4.—Crystal Palace (Roses). Eltham (Roses).
 „ 7.—National Rose Society, South Kensington. Ealing.
 „ 8.—Wimbledon. Sutton (Roses). Lee, Blackheath, and Lewisham.
 „ 9.—Hereford (Roses). Norwich.
 „ 11.—National Rose Society, Manchester. Sidcup.
 „ 14.—Royal Horticultural Society (plants and flowers). Christleton (Roses).
 „ 15.—New Brighton (Roses). Bedford. Moreton-in-Marsh.
 „ 16.—Chiswick. Helensburgh (Roses). Winchester.
 „ 18.—Birkenhead (Roses).
 „ 21.—Newcastle, Staffs.
 „ 22.—Newcastle-on-Tyne.
 „ 25.—Darlington (Roses).
 „ 28.—Royal Horticultural Society (Carnations, Begonias, &c.). Buckingham.
 „ 29.—Aberdeen.
 August 1.—Liverpool (two days). Southampton (two days).
 „ 2.—Antwerp Exhibition of Plants (five days).
 „ 3.—Northampton.
 „ 11.—Royal Horticultural Society (plants and flowers).
 „ 19.—Shrewsbury (two days).
 „ 25.—Royal Horticultural Society (Cottagers' show).
 „ 27.—Ludlow.
 Sept. 2.—Glasgow.
 „ 3.—Abingdon.
 „ 4.—Crystal Palace (Fruit and Dahlias), (two days).
 „ 8.—Royal Horticultural Society (Dahlias and Grapes).
 „ 9.—Edinburgh (two days). Northampton (two days).
 „ 27.—Antwerp (fruit and vegetables), (three days).
 Oct. 7.—Crystal Palace (fruit and Potatoes).
 „ 13.—Royal Horticultural Society (fruit and vegetables).
 „ 27.—Royal Horticultural Society (Chrysanthemums and vegetables).



KITCHEN GARDEN.

RESULTS.—These are now very satisfactory. Tender young Turnips, Carrots, Potatoes, Broad Beans, Peas, Spinach, Globe Artichokes, Lettuces, Radishes, Cabbages, and Cauliflowers are all abundant in the open borders from the spring sowings. There is no time in the whole year when vegetables give more satisfaction on the table than at this season, and the praise they receive is ample compensation for the anxiety and trouble devoted to the nursing of the plants when young. After all, we are never satisfied, and always live in hopes of having things better and earlier year after year. With this object in view notes should now be taken to rectify any little mistake in practice or variety, and consult these before beginning next spring.

KITCHEN GARDEN WORK.—This is not very pressing now. Most of the crops have been planted and only require attention in earthing up,

thinning, clearing, and watering as these operations become due. We make a great effort to have the kitchen garden in the best of trim at this time, as much time will soon be occupied in gathering small fruits, and other work has to give way to this. No one should feel contented where their vegetable garden is a mass of weeds at this season. They will soon seed and give much trouble. There may be no time to rake and put a fancy surface on the ground, but surely the Dutch hoe might be worked between the crops on a fine day. This is all that is required.

ASPARAGUS.—We do not remember a year when this was better than it has been lately. It was late in beginning growth, but the growths have been uncommonly numerous and extra strong. This we attribute to the excellent way the roots and crowns were matured last season. The warm weather then suited them admirably. Asparagus is one of the most favourite vegetables; many are so fond of it that they begin to cut too soon from young roots, and cripple them before they have become established. They should be three years old at least before any cutting is done, and then only if they are strong. Late cutting is also injurious, and should be stopped at once. If there are two or three strong heads coming away from each crown do not be tempted to cut them with the hope that others will push up to take their place, as these may never come, especially if much cutting has been done already, and the crowns will be ruined. A few small growths might come up yet, but they would hardly be of a character to improve the plantation, and this is the main consideration with all good Asparagus growers.

As a rule if there is one position more weedy than another in a kitchen garden in summer it is the Asparagus beds or plantation, as attention to it often ceases as with the end of the cutting of the produce; but this should not be so, as a clean open surface is a very great help. This should never be forgotten. As the growths run up and any of them show signs of falling over, stake and tie up before this happens. When it is raining sprinkle a handful of a mixture of soot, salt, or guano around each plant. It will soon be washed down, and stimulate growth considerably. There should be no forking done amongst Asparagus roots now.

MATURED CROPS.—Early Potatoes, Spinach, Turnips, &c., are being cleared off the ground fast, and it should not remain empty a day. If fairly well manured in spring do not fork or dig now, but level with the fork or hoe, and sow with Turnips or more Spinach, and keep on planting all kinds of winter greens. Gilbert's Universal Savoy is now being put out in large quantities, and so are Autumn Giant Cauliflowers and Self-protecting Broccoli.

ONIONS.—The autumn-sown ones have now bulbs 10 inches and 12 inches in circumference, and they are being drawn daily for kitchen use. They are very valuable now, and we have never had a more satisfactory lot. We have not lost a dozen from any cause, and we never had so few of them going to seed. Many who sowed early and had larger plants than us in the autumn have lost scores of them from the latter cause. They have been growing on rich ground, and this is now being filled with Brussels Sprouts, which are good large plants, and have been transplanted once from the seed bed. Spring-sown Onions are growing fast. They are very promising. The seed germinated well, and they received no check. A little patch, to which some of Clay's fertiliser was applied, is far in advance of the others. We never severely thin our spring-sown Onions. We draw many of them for use as they are wanted, but this does not anything like thin them to excess; and by August the majority will be clustering together in dense masses. They might come larger if thinned more, but we do not approve of very large Onions for general use, and the smaller ones are always soundest, and keep best.

TOMATOES.—These have now formed some fruit in the open. The plants are against a sunny south wall, and have only one shoot—the leader, which is going up slowly. They should all be out now. In cold localities stand a frame-light over them, especially at night, until fully established. Nail or tie them up often; never allow the shoots to fall over and become twisted. This retards development and spoils the plants. The first fruiting plants under glass may be thrown away if the bulk of the crop has been secured, but try and keep a few younger ones fruiting until the open-air-grown fruits are ripe. We are now having our second batch, and have a third coming on to make sure of a supply should bad weather keep back the open air fruits. Thomson's Vine manure is a useful fertiliser for Tomatoes.

SALADS.—These are now much appreciated. The main point is to have a constant supply. To have a glut now and none in a few weeks hence will never please. Sowing and planting often, and in small quantities, is the secret of successful summer salad growing. Mustard and Cress should be sown weekly, and so ought Radishes. Lettuces may be sown once a fortnight, and two or three score or more, according to the demand, should be dibbled out every ten days. We have sometimes seen a very large batch of Lettuces, ten times more than were wanted at the time, all in together with no others near them coming on, and it would have been far more satisfactory to have them in two or three successional batches.

Earth up Dwarf and Runner French Beans; stake the latter. Attend well in these ways to the later crops of Peas; plant out more Celery; water the early plants freely. Where any crop has failed lose no time in sowing again. Our small early patch of Beetroot is good, but for some reason much of the main crop seed has failed, and we are sowing more. Where Peas are very strong and falling out between the stakes put few more stakes here and there to support them. We have had to go over many of our rows in this way.

FRUIT FORCING.

PINES.—Watering and ventilation must have strict attention at this season, especially those plants which are swelling fruit. The plants in fruiting pots should be examined at least once a week with the hand, and others in smaller pots more frequently; and whenever a supply is needed afford it thoroughly with some stimulating agent intermixed, but weak and tepid, and in the process of watering let it be poured into the plants well up the stems, so that the axils of the leaves may have the benefit of it as well as the roots, being careful to see that the space above the soil in the pot is well filled at this time. When the fruit approaches maturity and begins to soften it should be kept free from condensed moisture as much as possible, particularly in the early part of the day, when the sun will at times scald tender-skinned kinds, particularly Queens. To obviate the probable mischief, let the house be ventilated early in the morning of a likely fine day, or apply a slight shade over the glass until the fruit is perfectly dry. Young plants will now be growing vigorously, and will need free ventilation to keep them sturdy, with ample space for development, and close proximity to the glass. If the weather be very bright it will be advisable to shade lightly for a few hours at midday.

VINES.—*Lifting Vines Early.*—Where the Vines are not in a satisfactory condition, and the roots have the run of both inside and outside borders, one or other of these may be taken out as soon as the crop has been cleared. It is important that work of this kind be done with dispatch, any delay in lifting and relaying the roots in fresh material being disastrous; therefore, to prevent delay, fresh compost and clean drainage should be prepared, and within easy access. Keep the house moist and shaded to prevent the roots and foliage suffering during the operation of lifting and re-arranging the borders. When the work is completed the roof will require shading on bright days, and the Vines will be the better for frequent syringing, with a moist heat from sun influence until new growth is perceptible, when the ordinary treatment may be resumed, and they will be well furnished with fresh roots and ready for starting in December without showing any effect except a favourable one on the crop following.

Planting in Early Houses.—If the Vines in early houses are in very bad condition, and it is considered advisable to replant, vigorous young Vines from this year's eyes may be planted with every prospect of their filling the house. A narrow ridge of compost will be sufficient for this season, and under good treatment plump eyes will ripen near the base for cutting back to, and these will throw up fruiting canes next year.

Late Grapes.—The thinning of these of all varieties should be finished without delay. Black Hamburgs intended for use through November and December will require more thinning than is necessary or advisable where the Grapes are used before the leaves fall, and small or medium-sized bunches through which the air can pass freely will be found better keepers than those with large bunches or heavy shoulders. When the berries begin to swell freely all weak laterals may be allowed to grow, but the strong ones will require close stopping and tying down to keep the sap equally distributed, and to secure firm short-jointed wood that will be likely to ripen well.

Grapes Scalding.—Lady Downe's, as well as the most forward or general crop of Muscats about stoning, will require close attention to prevent scalding, which, though attributed to the sun, affects berries upon which it never shines directly. It is always the most troublesome when there are sudden changes from heat to cold, and *vice versa*, and is aggravated by a low temperature followed by a sudden rise before air is admitted on bright mornings, when the berries having become cold through the night, moisture is condensed, and the cuticle or skin on one side, that most exposed to rapid evaporation, is scorched. To prevent this evil, which is often confounded with disease, a warm dry atmosphere should be maintained through the night, with increased ventilation before the temperature begins to rise from sun heat. For Vines in good health the liability to scald does not extend over a period of twelve to fourteen days, but those with the roots sluggish in cold wet borders take twenty-one to twenty-eight days before they are out of danger from scalding.

Vines Swelling their Crops.—These should have thorough supplies of water passing through a good mulching of decayed material, and, if necessary, using warm diluted liquid manure from the manure heap, which, after all, is the very best that can be employed; but where this cannot be had, guano or some of the artificial manures are excellent, acting in a most beneficial manner upon the foliage, and consequently fruit. Close early, with plenty of atmospheric moisture obtained by damping available surfaces with rain water, using liquid manure occasionally, and before nightfall admit a little air, alike to allow any pent-up moisture to escape and the temperature to gradually cool and secure to the Vines the needful rest from the minimum temperature.

Grapes Ripening.—When Grapes begin to change colour for ripening an examination of the border should be made, and if necessary a thorough supply given of water or liquid manure in a tepid state, choosing the early part of a fine day, on which ventilation can be rather freely provided, so as to allow of the superfluous moisture escaping before closing; and if mulched over the moisture will be sufficient to tide the Grapes over the ripening, and under ordinary circumstances until their removal from the Vines. A circulation of rather dry warm air is essential to perfect finish, and when the Vines are carrying heavy crops it will be advisable to allow the night temperature to fall to 65°, or even 60°, so as to rest them as much as possible, not hurrying them, but affording plenty of time, and a freer extension of the laterals should be permitted, so as to keep the root-action active, than when the Vines are but lightly cropped. Although a drier condition of the atmosphere is desirable when the Grapes are ripen-

ing than when they are swelling, it does not answer to entirely deprive the Vines of air moisture, as a moderate amount is essential to the health of the foliage and the swelling of the berries to a good size.

PLANT HOUSES.

Roses in Pots.—Varieties of Hybrid Perpetuals that have been forced indoors and since grown in a cool structure should by this time be well hardened and ready for placing outside. If convenient the pots can be plunged, covering the rim, which will save considerable labour in watering, and the plants will root and do much better than if stood upon walks and their pots exposed fully to the force of the sun. An open sunny position should be selected for them, and if the soil is moist and the material in which they are plunged afterwards kept moist the plants will not need water at their roots for a long time. To attain success another year the foliage must be kept free from insects and mildew, and in order to accomplish the former the plants should be well syringed twice daily. At the first appearance of mildew 1 ounce of soft soap should be dissolved in 1 gallon of water, and a handful of sulphur added to each 4-gallon can of the solution, the foliage being well syringed with it, which should be allowed to remain on three or four days before being washed off.

Hydrangeas.—If plants are wanted to flower in 5-inch pots with one good truss of bloom each for another season, every attempt must now be made to prepare plants for supplying good cuttings set with flower buds in early autumn. For this purpose good-sized plants that have been forced indoors, and have now a number of growths upon them, should be hardened for placing outside. Plunge the pots the same as advised for Roses in the most sunny position that can be found. The plants must be supplied liberally with water, and occasionally with liquid manure, so that the growths will be strong and the flower buds early.

Deutzias.—Those that have their pots full of roots must be liberally supplied with weak stimulants every time they need water to thoroughly develop their growths and flower buds for another year. The earliest plants will have completed their growth, should now be thoroughly hardened and then placed outside, but care must be taken that they are not checked. Grow later batches in cold frames or in a cool house until their growth is completed, for unless this is accomplished and their growths well ripened long well-flowered shoots cannot be expected. No plants repay for a little care better than these charming flowering shrubs, and if turned out directly after flowering as commonly practised, they cannot be expected to flower well the following year.

Prunuses.—Do not turn these out yet, for the growths are not sufficiently advanced, and if prematurely ripened they will not flower satisfactorily next season. To grow these plants well the growths must be well developed under glass and ripened before they are turned out to rest. The slender growths will still lengthen considerably if liberally treated, and then if well and gradually ripened in full sun they will not fail to flower profusely from the top of the shoots to the base.

Solanums.—Plants started and treated as previously directed will have set a good number of berries already, and will still be growing and flowering freely. To have the plants well laden with their brilliant berries during the winter they must be kept growing slowly for some time yet, and the berries will set better if the plants are outside than what will really be the case if kept in frames. Great care must be taken in hardening these plants, for if checked the growth will be brought to a standstill, and poorly berried plants will be the result. When sufficiently hardy to be placed out the pots should be plunged on a warm sunny border, covering the pots with soil to prevent evaporation. In all probability the plants will root over the sides of their pots, but no injury will be done to the plants by their removal in autumn. Liberal supplies of water must be given; in fact the plants must not be allowed to suffer by an insufficient supply of water, or their foliage will soon turn yellow. Soot water acts quickly upon these plants, and no stimulant is better for assisting to keep the foliage a healthy dark green colour.

Choisya ternata.—Plants that were cut back and started into growth by being kept close in the greenhouse or a frame will now be growing vigorously. They should be grown cool from this date, admitting abundance of air night and day until the lights can be taken off. When these plants have been hardened they should be plunged outside in a position exposed to the sun to ripen their growth and set their flower buds. They flower freely when the wood is well ripened on dwarf sturdy growth, but when subjected to greenhouse treatment the whole season the growth is long and weak, the wood poorly ripened, and very few flower buds are formed.

THE BEE-KEEPER.

PRACTICAL NOTES ON BEES.

MASSACRE OF BEES.

AT page 241 Mr. G. Abbey gives an interesting and instructive article, especially to the uninitiated, which is well worth reading and studying. The subject is one of great importance as regards profitable bee-keeping, and I will therefore describe a few cases which have come under my own observation that resulted in disaster through direct carelessness. Sometimes there is a difficulty in tracing the cause from the effect, but in this wholesale slaughter of bees, often caused through modern manipu-

lations, there is seldom any difficulty, and is, as your correspondent puts it, "A worse than the brimstone pit system."

When the temperature rises to 50° bees generally become strong on the wing, and if flowers are abundant in spring, robbing, unless through gross mismanagement, seldom takes place. This rule, however, does not hold good during summer nor autumn; flowers may be abundant but honey absent. In such cases, then, bees are ever on the outlook for plunder, the same thing occurring when there is a paucity of flowers in spring. When this is the case weak and queenless hives are sought and plundered; in turn carelessly fed ones are assailed, a general commotion and fighting take place, bees search everywhere and enter places where they cannot escape. It is their nature to gather honey from Nature's source, but when this fails they hunt after substances to their ruin. From the opening of the year until May bees are intent on raising their brood, and will suffer death rather than give up the charge, but singular to say, after that date, if famine continue, they ruthlessly destroy the young which were destined to be the future life of the hive.

The following question is one of scores that have been put about bees being robbed and of queens being killed, and points directly to the cause, and is but one of many similar instances. "On the 25th of March, the day being fine, I gave my bees a 'picnic.' They were out in great numbers and soon emptied the hottles. The bees clustered much at the mouth, and I examined some of them and saw much brood and the queens. Two days after I saw some dead bees lying about, and the 15th of April I examined them again, and although there were many bees and the queens still all right, there was no brood. What could be the cause? I had no difficulty in answering as to the cause as follows. You in the first place acted most injudiciously in inciting your bees to rob by "picnicing" them, then while that was going on you still further aggravated the case by examining hives at such a critical time. No doubt the robber bees entered the hives when you were examining them and killed the queens. The queens you saw and state to be all right are not the queens you saw on the 25th, but are young ones raised in the stead of old ones killed by robbers through your own mismanagement. For the benefit of those who did not read the *British Bee Journal*, and who may not be aware what a "picnic" is, I will now explain. "A bottle is filled with syrup, and is inverted and suspended to the bough of a tree, from where the bees sip the syrup," and will, wherever it is performed, cause the destruction of many bees. The originator of this wonderful idea discovered in his apiary encasements which, in his opinion, were due to be the bees trying to make the queen lay! but to my mind were caused by stranger bees hugging and stinging the queen to death, along with her own subjects trying to defend her, which had been brought about by the injudicious mode of feeding and manipulating.

It is somewhat unusual to see so valuable a letter from a novice such as Mr. G. Abbey describes himself. He traced the cause of disaster so effectually, that it surprised me the more to see so many learned associations and experts passing over and failing to teach the necessary caution required in manipulation and feeding which leads to such disasters. I do not know all the qualifications experts are expected to have, but that important one I know is seldom touched, nor yet, so far as I have witnessed, demonstrated at shows.

Your correspondent speaks of the courage of the different varieties of bees. So far as I have observed the Ligurians effect an entrance more easily to the black bees' hive than the latter do to the Ligurian hive, and when an assault is made by the Ligurians they soon give it up if met with strong opposition. It is not so with the blacks. They do not storm in such great numbers, but they keep up a continual warfare on the sentinels of the attacked hive until they are either worn out or killed, the storming party always relieving each other until their end is attained.

One of the memorable bad seasons that occurred about twenty-five years ago I took thirty good hives to the moors. The weather, though not fine, was fairly good, and the bees being anxious to work started at once, and continued working during the season, making on an average about 25 lbs. each—very poor considering the strength of the colonies and the field of Heather. Within one week after I placed my thirty hives the number had increased to nearly 400. A number of these hives had collapsed during the journey, and the combs were carelessly thrown down amongst the hives, which attracted the others, and a general fight ensued, the result being not one hive except my own made a single pound. Through the fight none of them seemed to have the courage to leave their hive. It was simply a case of defence, for none was really robbed out. My own hives having been first there had found the honey-yielding places and continued working on them till the end, never having joined in the *melée*. Had the other hives not been thrown into such a state of excitement by the imprudent action they would have gathered a share. I can never forget the exclamation the old man made when I visited them at the end of the three weeks after I set them down. After inquiring for his and their welfare, he said, "Man, I canna unnerstaun it, there is not a bee out of the four hunner hives has dune a hauns turn, but your ain."

Some years later about forty hives stood in several apiaries there. In September a stock of driven bees stood near them. The owner commenced feeding during a fine day. The uproar soon began, and the fighting was so great that out of the forty hives, which were all good, only fifteen were left sufficiently strong to stand the winter. I have known similar results by inadvertently opening a hive or spilling but a few drops of sugar or honey at a time when honey was not to be had, but warm enough to encourage bees to fly and fight. Bee-keepers sometimes put their empty or partly empty combs into sheds that the bees have access to, and sometimes feed the bees with such combs after the fashion of the picnic. In such cases I have known a whole apiary destroyed, and

in one case there could not be less than 100 hives that were rendered almost useless. Hives are sometimes rendered liable to attack by interfering with them at a wrong time and in such a manner that they are rendered helpless by the manipulations taught by the modern school, such as smoking the bees, which is sometimes done too well, and when they have gorged themselves and become sick the plunderers get their own way. In a case similar to your correspondent's I remember two hives of driven bees—*i.e.*, six stocks—put into two standing after being driven two days without meat, the result being in this case six heavy hives were totally cleaned out and another dozen destroyed. I could give a hundred such cases were it necessary, but it is not, only to support Mr. G. Abbey's statement and to impress bee-keepers with the necessity of using caution in their manipulations.

Where only a few hives exist there is no difficulty in preventing robbing, but where there are many hives and apiaries in close proximity there is great difficulty if any of the bee-keepers are unmindful of their own or neighbours' interest and act carelessly in any way as stated above. Those bee-keepers who can keep their bees from attacking or being attacked will be successful. When hives are attacked the entrance should be contracted to the least possible width consistent with the number of bees in the hive, and if a flat tube of 3 or 4 inches in length, and tapered, say, from 4 inches inside to one outside, and this slipped into the mouth of the hive flush with the outside, it sometimes has a good effect in stopping an invasion. The stranger bees finding themselves in a tunnel are afraid to proceed, and the sentinels remain at their post close to the entrance. When the tunnel projects some distance outside, the sentinels are put off their guard, and the robbers are allowed to pass; gaining courage, they venture into the tunnel and gain access to the honey without much opposition. If the position of the entrance is altered by a projecting tunnel the incoming bees are puzzled and cannot find their way to their hive. This letter does not touch upon all the points necessary in so important a subject, but it may induce many to exercise their judgment in preventing disaster.

SUPERING.

Although some keep bees for no other purpose than watching their labours and studying their natural history, still the majority of bee-keepers are wishful for well-filled supers. But some bee-keepers imagine there are difficulties in obtaining these or getting the bees to enter supers. I have in my previous articles given full instructions how to proceed and what to avoid towards being successful, but there is one thing not mentioned, which in cold seasons needs to be carried out. It is a part of the Stewarton system, which is giving the bees an eke, then when the honey glut comes it is taken from them and a super is put on; but ekes I consider objectionable, because the bees extend their combs into it, and it then cannot be separated without waste. I therefore recommend an extra breeding box, or even a honey box, provided this last one is not more than a day or two on, as otherwise the combs would be discoloured and eggs might be laid in the new made comb. If a body box is put underneath, it can, on removal, be utilised by giving it to a swarm or an increasing stock a little later. When these nadirs are removed, which have in the interim prevented swarming or the raising of royal cells, the increase of bees during that time on their removal forces the bees into the super. Then, to carry out this to perfection, in a few days after the super has been commenced in, a comb, but otherwise empty breeding box, should be again put under; this brings down the queen and affords cell space for honey if coming in plentifully. These comb boxes the bee-keeper should study to have by him from the previous year. Where this is neglected comb foundation should be fixed of nearly full size. Frame hives may be treated in a similar manner by removing a frame, when the bees will, through overcrowding, enter the super; after a day or two the frame should be returned. Experienced bee-keepers seldom fail to get bees to take to supers when the right time comes and the hives are in order, but bees will not enter supers unless they are forward enough, and bee-keepers should not force them into them until they are ready.

Comb-foundation has of late years been used of great thickness in stock hives, and bee-keepers have been advised to its use as the only safe method. This is a mistake; such thick sheets are expensive, and in reality do not prevent breakdowns, the chief cause being, so far as I have observed, the crowding of the bees into too little space, over-heating the hive, the wax softens and collapses. In my stock hives I use foundation with nearly 9 square feet to the pound, the same as I use in supers. I do not crowd my bees, and I never have collapsed combs. The only precaution I use is that the wax is genuine.

One of my oldest feeders, which has never been explained, will be found useful in every apiary, and to every hive. It places the sugar inside the hive and close to the bees. A stick or two of barleysugar can be placed in it, and though it diliquesces does not drip on combs or bees, and the combs and bees are never exposed when feeding, and does not occupy extra space in the hive, being an ordinary frame, having the top bar about half an inch thicker than usual; the upper side of the bar is morticed, forming a trough nearly the whole length of the frame, and a quarter of an inch deep, only thus securing bees against drowning. About three-eighths above the trough is cut away to give the bees access to syrup unless about 2 inches in the middle—this part is boxed in to prevent bees escaping when feeding. An ordinary frame will require to be glazed or covered with thin wood. Those with lateral slides have a hole through it admitting the fountain, which may be either of tin and glass or a bottle, both fitted with a tube and ball acting as a valve, which completes the best and safest of all feeders for either a strong or a weak hive.—A LANARKSHIRE BEE-KEEPER.

"BEES."

UNDER the above title two numbers of a publication by Mr. Frank Benton of Munich have reached us, which is probably the smallest serial issued. It consists of a single sheet, 9½ inches long by 6 inches wide, printed on both sides, and appears to be issued at different places visited by the publisher, as that for March is dated from Larnaca, Cyprus, and the April number from Beyrout, Syria.

As an example of the matter we extract the following from No. 3:—

THE EASTERN RACES.

Many into whose hands these lines may fall will doubtless know that I passed the years 1880-81-82 in the Orient, devoting my whole time to bee-culture, and that I have since then visited several different countries for the purpose of procuring the most valuable races of bees as well as the choicest queens to be had.

In 1880 "The Cyprus Apiary" consisted of over 200 colonies of bees collected in various parts of the Island, and in 1881 the "Mt. Lebanon Apiary," having eighty to 100 colonies, was established by purchasing stock hives from numerous apiaries located on the sides of Mt. Lebanon. Many apiaries were visited also where no purchases were made, and I have conversed with a large number of the native bee-owners in many different parts of the East, but have never seen a trace of foul brood nor heard of its existence there. This is worthy of note, since the native bee-raisers in those lands are well acquainted with the birds, insects, &c., which are injurious to their bees. I believe myself fully warranted in the conclusion that the disease does not exist there.

After five years' experience I am of the opinion that the first rank should be given to

CYPRIAN BEES as the best bees, all things considered, yet cultivated. They were discovered and first imported from Cyprus by Mr. Edward Cori, Director of Chancellery in Bohemia, and are now raised largely in Austria, Germany, and America. The queens of this race live on the average longer and show greater prolificness than do those of the black or Italian races, but less inclination to rear large numbers of drones. They commence laying earlier than either Italians or blacks, and continue later in the season; moreover, they do not stop brood-rearing at every check in the honey flow. It results from all this that Cyprian colonies are always very populous, hence are prepared for every harvest that comes along and go into winter quarters in good condition, and since this race shows the greatest energy and diligence in honey-gathering, remarkable yields of honey can be obtained with it if rightly managed. A striking example of this is the yield of 1000 lbs. of honey obtained by a well-known bee-keeper, Mr. B. F. Carroll of Dresden, Texas, in a single season and from one hive of bees. Cyprians winter excellently, even in very severe climates. They show the greatest courage and perseverance in defending their hives against robbers, moths, &c., in fact they are robber-proof and moth-proof. When high winds prevail they are extremely prudent about venturing out, although their flight is strong and swift. They frequently construct eighty to 100 queen cells at a time, and the young queens upon emerging are remarkably vigorous and active. When the combs are removed from hives of pure Cyprians the bees do not run to the lower parts of the frames and drop off in clumps as do black bees, but remain, like Italians, spread evenly over the combs. They can, however, be shaken from the combs as easily as black bees. Cyprians are the yellowest, most beautiful bees yet discovered, and the race is such a well-established one that in all crosses obtained with it the Cyprian blood has the greatest influence, and is even easily discernible through many generations. This potency in transmitting its markings and qualities is positive proof that the Cyprian is a vigorous, well-established race developed by many centuries, perhaps even thousands of years, of natural selection.

The claim that Cyprian bees are possessed of such great stinging propensities as to make them nearly unmanageable I have not found well based; indeed, in common with many others who have carefully tested them I prefer to manipulate Cyprians rather than Italians, and find that, while getting no more stings from them, I can get on much faster with the work.

obviously much too short, and if the upper clip is intended to grasp the spike between the bells, will it not be a little inconvenient to affix without injuring some of them?

Pelargoniums (Under Gardener).—The most readily observed distinction between Pelargoniums and Geraniums is that the former have slightly irregular flowers, one of the lower sepals being prolonged into a spur which adheres to the flower stalk. This is not seen in true Geraniums, and the latter, moreover, are mostly herbaceous plants. The best way to distinguish the types of cultivated Pelargoniums is to visit a flower show, and you will more readily understand the difference than from a description. The Show varieties should have smooth round flowers of good size. The Regal and Decorative commonly have crumpled or fringed petals, and the Fancies are much smaller in size and of very compact habit.

Vines Leaves Withering (R. H., Taunton).—We should cleanse the Vines from red spider in the manner indicated last week, but if you cannot do so you may apply Fir tree oil or sulphur now, the former through a spray-distributor, the latter through a sulphurator or tied up in a bit of muslin, dusting when the leaves are wet. You will do well to allow an extension of laterals to "take the place of the fallen leaves," allowing all the leaves to form that can develop fully under the direct action of light and no more. You had better crop very lightly this year and ventilate early, or the young leaves will collapse like the old, and the Vines should be syringed when the sun is declining to prevent the spread of the pest, yet soon enough for the leaves to dry before nightfall, when the top ventilators should be opened to the extent of an inch or two and remain open all night.

Insects on Apple Trees (J. C., Downpatrick).—So far as we can judge from your description, and without our seeing the leaves or the insects, the Apples in question have been infested by the Apple chermes, or Psylla Mali, a species akin to the familiar aphid and the "scale." The eggs are laid in autumn upon the branches, and the insects appear during April, the buds being usually their object of attack, but they will occasionally spread themselves over the leaves of the Apple, which then look white and slimy, curling up and dropping. It should, however, be added that an appearance somewhat similar to what you describe is caused by one of the species of aphid or fly that in some seasons resorts to the Apple, though not occasioned by the visitation of the commoner species, Aphid Mali. The spots simply of various sizes and shades of red or yellow noticeable upon the foliage of Currants and Gooseberries are caused by a cryptogamic growth, not by insects. Besides these we may discover small swellings or protuberances on the under side of the leaves generally, often placed in clusters, which are the homes of a minute species of gall-mite or Phytotus, a wingless insect allied to the red spider and the harvest mite. In regard to the book concerning which you inquire, we do not know any small modern work upon the subject of the insect foes of fruit trees. Besides the book you mention there is some useful information in Kellar's work (Westwood's edition) on the insects annoying gardeners and farmers, which may be picked up second-hand. Some years ago Professor Duncan published a volume, now out of print, we believe, on the "Culture of Fruit Trees, and the Insects infesting them."

Souvenir de la Malmaison Carnation (E. D. O.).—With very light adequately heated low span-roof houses, or pits for the plants in winter and spring, striking stout cuttings periodically, and growing the plants well, blooms may be had more or less plentifully throughout the year, but they cannot be relied on in the absence of adequate means for producing them, such as an ordinary greenhouse crowded with a variety of other plants that require different treatment. The plants may be grown in cool frames, or even in the open air in the summer, and will then produce flower stems and buds that will expand in a very light house having a genial temperature between 50° and 60°. Established plants will flower from the present time till the autumn, and strong cuttings rooted now will, if well grown, flower in the winter and spring. A supply of blooms cannot be had all the year round, from, say, a dozen plants all in the same stage of development. Carnations are best produced in the winter in houses that are practically devoted to the culture of the plants, and it is in this respect that growers of flowers for market have the advantage over the great majority of private gardeners and amateurs, whose glass accommodation limited, and who have to grow in the best way they can a great variety of plants together. It does not follow, then, that because blooms of the Carnation in question can be had all the year round that it is in the power of all cultivators to produce them.

Ferns and Plants for Room (H. M.).—We have found the following plants suitable and easily cultivated. Ferns are very useful, but it is necessary that the growths be completed and hardened before placing in such a position, or the fronds from the drier atmosphere of a drawing-room are liable to suffer. Ferns are—Adiantum assimile, Capillus-Veneris, æthiopicum, cuneatum, formosum, setulosum; Asplenium bulbiferum, caudatum, dimorphum, and premorsum; Blechnum occidentale, Davallia dissecta, D. tenuifolia, Doodia aspera, Goniophlebium appendiculatum, Gymnogramma ochracea, G. tartarea, Lastrea decomposita, L. decurrens, L. elegans, Lomaria gibba, L. Herminieri, L. Patersoni, Nephrolepis davallioides, N. exaltata, Platycerium alcornice, Platyloma rotundifolia, Pteris cretica albo-lineata, P. longifolia, P. serrulata, P. serrulata cristata, P. umbrosa. Those require stove or greenhouse temperature. Hardy Ferns are even more suitable, of which we name a few which succeed admirably grown in a cool greenhouse:—Asplenium adiantum nigrum, A. marinum, A. trichomanes, Athyrium Filix-fœmina, vars. Applebyanum, apuæforme, corymbiferum, and plumosum; Blechnum spicatum, and var. imbricatum; Lastrea dilatata cristata, L. Filix-mas, var. cristatus; Osmunda gracilis, O. regalis cristata, Polypodium dryopteris, P. vulgare, P. vulgare cambricum, Polystichum aculeatum, P. angulare cristatum, P. multifidum, Scolopendrium vulgare, vars. corymbiferum, crispum maximum, ramo-cristatum; and Lycopods, which do well in a stove with moisture, as Selaginellas erythropus, formosa, Lyalli, Martensi variegata; and in greenhouse, S. Willdenovi and denticulata. Stove plants—Alocasia Jenningsi, Anthurium Schertzerianum, Aralia leptophylla, Croton Johannis, C. angustifolium, C. Weismanni, Cyperus alternifolius fol. variegata, Dracæna Cooperi, D. reginæ, D. stricta, D. utilis, D. rubra, D. terminalis, Jacaranda mimosæfolia, Maranta zebrina, Mussænda frondosa, Pandanus graminifolius, Panicum



TO CORRESPONDENTS

* * All correspondence should be directed either to "THE EDITOR" or to "THE PUBLISHER." Letters addressed to Dr. Hogg or members of the staff often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

Hyacinth Holder (J. T.).—The arrangement of the wire appears both simple and ingenious, but we should prefer to try the holder before expressing a definite opinion upon its merits. The example you have sent is

variegatum, Paullinia thalictrifolia, and Pilea muscosa. Isolepis gracilis is very useful, and fine-foliaged Begonias.

Peach Leaves Skeletonised (J. M. M.).—The leaves which you have sent have not been eaten by any insect. The immediate cause of the injury to the foliage is scorching, but there may possibly be a more remote cause that has led to the evil. If you carefully examine the injured leaves, which at the first glance appear as if they had been eaten by an insect, you will find first a dark discoloration, then a shrinkage of those parts where the tissue has been ruptured, and which eventually separates from the healthy portions of the leaves, and thus form holes and fissures. If the roots of the tree were healthy and active and could obtain the requisite moisture for the support of the growth, the evaporation would not have been so disproportionate with the supply of sap, and the withering would not have occurred provided there was no fault in the glass that led to scorching. As a remedy we should first shade the tree, either by sprinkling limewash on the glass or covering with tiffany, and syringe judiciously to keep the foliage fresh, then examine the roots and rectify any mistake that you may find there. The border may be too dry at the bottom, or the soil not sufficiently fertile, needing liquid manure, or the roots may have come in contact with something that has injured them. Examine also the stock of the tree, which may not be healthy, or the sap vessels may be too contracted. By some cause or other the supply of sap is insufficient, the sun extracting the moisture from the foliage faster than it is supplied by the roots. A close examination founded on these suggestions will probably lead to the discovery of the real cause of injury, and a remedy will possibly be dictated by the circumstances of the case. We have further to add that we have seen Peach leaves injured in exactly the same way by excessive fumigation, the material not having, perhaps, been the safest and best for the purpose.

Names of Plants.—We only undertake to name species of plants, not varieties that have originated from seed and termed florists' flowers. Flowering specimens are necessary of flowering plants, and Fern fronds should contain spores. Specimens should arrive in a fresh state in firm boxes. Slightly damp moss or soft green leaves form the best packing, dry cotton wool the worst. Not more than six specimens can be named at once. (J. E. C.).—You say the name of the plant, *Clanthus puniceus*, does not correspond with "the description given nor the character of the plant." We gave no description, nor did you indicate the "character" of the plant. When we first examined the dried specimen we were of opinion that it was of the plant named, but to gain assurance on the point we sent it to an authority who has the advantage of comparing with both living and dried specimens, and he gave the name quite in ignorance of our opinion. If you do not agree with the decision, will you be good enough to state what you consider is the correct name of the flower? (R. B.).—2, *Saxifraga ceratophylla*; 3, *Tradescantia virginica*; 4, *Saxifraga Hostii*; 9, *Saxifraga lantoscana*; 10, *Achillea aegyptiaca*; 12, *Armeria plantaginea*. We only undertake to name six plants at one time. (T. B. C.).—*Fraxinus Ornus*, the Flowering Ash. (P. E., *Bolney*).—The shrub is *Weigela amabilis*, a native of Japan, and sometimes seen under the name of *Diervilla*. (W. E. B.).—1, *Spiraea salicifolia*; 2, *Spiraea opulifolia*; 3, *Spiraea vacciniifolia*; 4, *Euonymus europæa*; 5, *Asphodelus albus*. (E. M.).—*Philadelphus Gordonianus*.

COVENT GARDEN MARKET.—JUNE 24TH.

TRADE less brisk, with heavy supplies, outdoor fruit making its appearance. Strawberries in large quantities.

FRUIT.

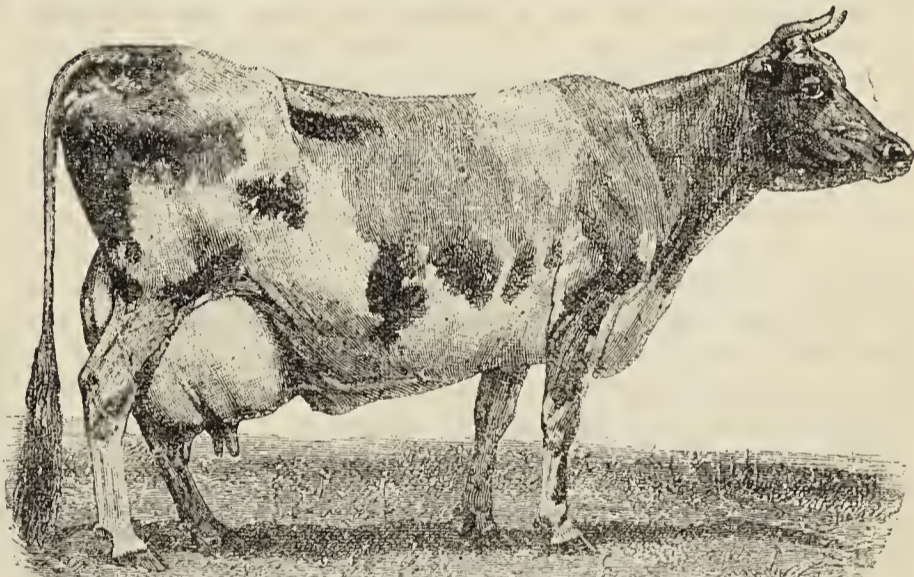
	s. d.	s. d.	s. d.	s. d.
Apples	½ sieve	0 0 to 0 6	Lemons	case 15 0 to 21 0
Chestnuts	bushel	0 0 0 0	Oranges	100 8 0 12 0
Cobs, Kent ..	per 100 lbs.	0 0 0 0	Peaches	per doz. 6 0 12 0
Currants, Red ..	½ sieve	0 0 0 0	Pears, kitchen ..	dozen 0 0 0 0
„ Black	½ sieve	0 0 0 0	„ dessert	dozen 0 0 0 0
Figs	dozen	4 0 6 0	Pine Apples English ..	lb. 2 0 3 0
Gooseberries ..	½ sieve	1 6 2 0	Strawberries ..	lb. 0 6 1 0
Grapes	lb.	2 0 4 0	St. Michael Pines ..	each 3 0 7 0

VEGETABLES.

	s. d.	s. d.	s. d.	s. d.
Artichokes	dozen	2 0 to 4 0	Lettuce	dozen 1 0 to 2 0
Asparagus	bundle	2 0 5 0	Mushrooms	punnet 0 0 1 4
Beans, Kidney ..	100	1 0 0 0	Mustard and Cress ..	punnet 0 2 0 0
Beet, Red	dozen	1 0 2 0	Onions	bunch 0 3 0 0
Broccoli	bundle	0 9 1 0	Parsley	dozen bunches 2 0 3 6
Brussels Sprouts ..	½ sieve	0 0 0 0	Parsnips	dozen 1 0 2 0
Cabbage	dozen	0 0 1 0	Potatoes	cwt. 4 0 5 0
Capsicums	100	1 6 2 0	„ Kidney	cwt. 4 0 5 0
Carrots	bunch	0 3 0 4	Rhubarb	bundle 0 4 0 0
Cauliflowers	dozen	2 0 3 0	Salsafy	bundle 1 0 0 0
Celery	bundle	1 6 2 0	Scorzoneria	bundle 1 6 0 0
Coleworts	dcz. bunches	2 0 4 0	Seakale	per basket 0 0 0 0
Cucumbers	each	0 3 0 6	Shallots	lb. 0 3 0 0
Endive	dozen	1 0 2 0	Spinach	bushel 2 0 4 0
Herbs	bunch	0 2 0 0	Tomatoes	lb. 0 9 1 0
Leeks	bunch	0 3 0 4	Turnips	bunch 0 6 0 0

Clover, the milk is at the best both in quantity and quality, and a correct estimate may be had of the relative value of the cows. This is the best time of year, therefore, for the work of selection, to improve the herd by withdrawing inferior animals from and adding better ones to it. Rules about the exact number of cows must be elastic, or rather we may suggest that heifers, when brought into the herd upon trial, shall not be reckoned as part of it till the second calving. This would be a safe rule, as it would always allow the requisite margin for keeping up a full supply of milk, cream, and butter. All dairy heifers should be in profit at fifteen months, so as to time the first calving as near as possible at two years, the calf and milk being then calculated to cover the expense of keeping the parent through the third year of its existence, with probably a slight margin of profit. There are instances where a considerable profit is obtained. The standard of excellence at which we aim in our selections should depend upon local circumstances. If the herd is a small one—say, under a dozen cows—we have to consider not only the supply of good milk, but the disposal of the calves. Near large towns fat calves have a ready sale for veal at prices ranging from £4 to £7 apiece, and Jersey heifers in calf are in demand for suburban villas, but bull calves of this delicate breed cannot be regarded as profitable. It is for this reason that preference is so frequently given to the larger Guernseys, or a cross-breed between Guernseys and a deep-milking selection of Shorthorns, the milk being rich and the young stock suitable for all purposes. This cross may certainly be recommended generally upon home farms. We have this season found the bull calves exceedingly profitable when fattened quickly and passed on to the butcher.

Upon some home farms a herd of Jerseys for the dairy and another of Sussex, Hereford, Polled Suffolk, or Short-



EUROTAS.

From photograph by Schreiber and Sons, Philadelphia.

horns for stock may now be seen. Of such we have seen several herds, either of imported Jerseys or pedigree cows of that famous breed, and we are bound to own that although many of the cows were handsome animals, yet we have never seen a herd of Jerseys at all equal to notable cows of which we are told such wonderful things. Take, for example, Eurotas, the portrait of whom was published in Harper's New Monthly Magazine for May. Her grand-dam Alpha would yield milk so rich that over 29 lbs. of butter a week was made from it, and Eurotas made 778 lbs. 1 oz. of butter in eleven months and five days, and dropped a calf within a year from the beginning of the test. Now, a glance at the portrait of this famous cow shows one that she was a deep milker, and she is a case in point of the truth of our teaching that very choice herds are often the descendants of one cow, and half a life's time is required to form such a herd. Let a

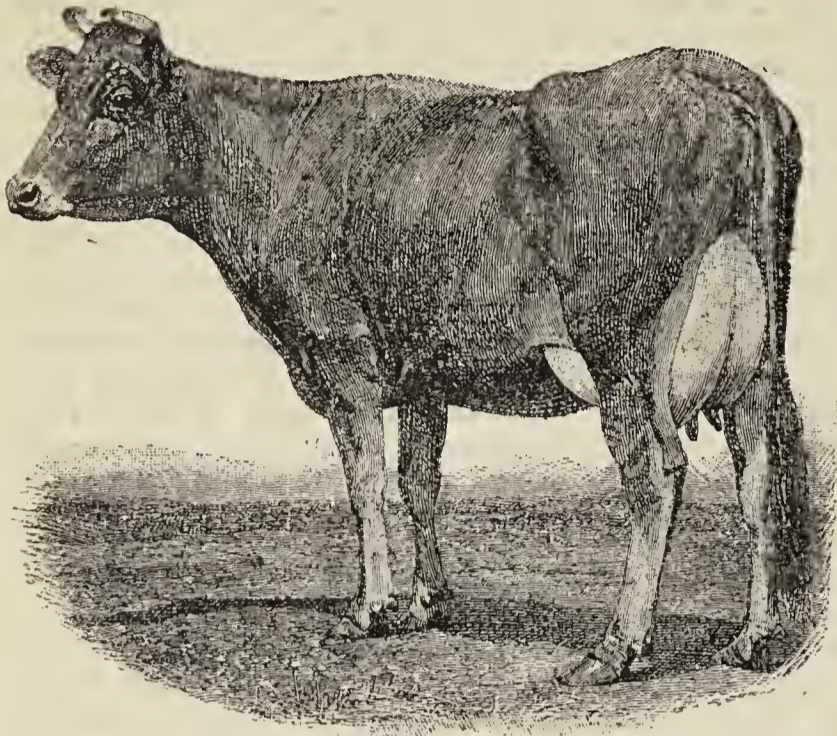


DAIRY FARMING.

SPRING.

WHEN the cows are fairly settled upon the pastures for summer, and they are having a full diet of fresh grass and

farmer get together a herd of such cows, and he might name his own price for them if he could be induced to part with them. Of other famous Jerseys we may mention Bomba, giving 21 lbs. 11½ ozs. of butter in seven days; Mr. Fuller's wonderful cow, Mary Anne of St. Lambert, giving 867 lbs. 14¾ ozs. of butter in eleven months and five days, and under official inspection by a committee of the American Jersey Cattle Club she gave 36 lbs. 12 ozs. in seven days, both of



MARY ANNE OF ST. LAMBERT.

From photograph by Schreiber and Sons, Philadelphia.

which tests remain unequalled. Mr. Ellms' cow, Jersey Belle of Scituate gave 705 lbs. of butter in a year; her daughter, Belle of Scituate, gave 18 lbs. of butter in seven days; and Valve II. gave 25 lbs. 2 11-12th ozs. in the same time under an official test. These important facts are gleaned from an article on Jersey cattle in America in "Harper's Magazine," and we quote them as standards for those gentlemen who wish to have a really good herd of Jerseys upon the home farm. To try and do this not only must a cow of extraordinary excellence be procured, but equal pains must be taken to secure a bull descended from a famous cow. Even then the attempt thus to form a high-class herd must be slow, and by no means sure—barrenness, bull calves, either or both may prove insurmountable obstacles. The remedy, or rather safeguard, which naturally occurs to one is to procure two or three cows, but such paragons are so rare, and, withal, so costly, that recourse is generally had to cows of medium excellence for the regular family supply of dairy produce. The calves of this delicate race require much care, and they should have a full supply of milk for the first six months of their existence, with more solid food as soon as they can take it.

It is quite possible that Guernseys may become as fashionable as Jerseys, for they, too, give very rich milk, are equally pure in breed, and a larger more vigorous race. By importation and breeding, the late Colonel Vernon-Harcourt got together a herd of magnificent Guernseys at Buxted Park, in Sussex. After his death the herd was dispersed, and a fine opportunity lost of effecting a permanent improvement in the dairy herds of that locality, where it is no uncommon thing to see herds of huge Shorthorns kept solely for milk, which is sent off by rail twice daily. Surely it can hardly answer to keep such cows for such a purpose, when few of them give more than eight or ten quarts of milk daily—milk, too, that it is so poor that it is only to be regarded as a marketable commodity when quite new.

WORK ON THE HOME FARM.

Advantage was taken of a showery time to plough in a heavy dressing of farmyard manure upon land cleared of Trifolium. Harrows and rollers followed the ploughs closely, and a strong gang of men was then at

once set to plant it with strong plants of the large Drumhead Cabbage, which soon became established in the warm moist soil, and we shall be well rewarded for this sharp practice by a valuable supply of Cabbages next winter for the dairy cows and breeding flock. In hot dry weather transplanting Cabbages is beset with considerable risk of failure, and it is only the drilled crop that is then really to be depended upon. Both this crop and Thousand-headed Kale are invaluable in winter and spring. With a full supply of Cabbages, neither Swedes nor White Turnips are given to the ewes till after lambing, which tend to reduce the risk of losses from abortion to a minimum. Mangolds have been thinned, and we had few vacant spaces in the rows to fill by transplanting, for seed-germination and plant-growth has been as perfect as possible. A word or two of congratulation upon this to one of our bailiffs led to the singular discovery that he had never done any transplanting of Mangolds, nor was he aware that it was possible to do it successfully! Haymaking is now being done as fast as possible; Clovers and Grasses are all abundant and the crop is a heavy one. We began a fortnight ago with nine acres of Trifolium incarnatum; this was followed by Rye Grass, a very strong growth of Cocksfoot, Timothy, Foxtail, and Red and White Clover, and then the meadow hay. As much of the work as possible is done with those three important implements—the mowing machine, the tedding machine, and the horse rake—three important labour-saving implements which, turned to full account, now help very much to keep down expenses, which, do what we may, always mount up at this season of the year. Before the corn harvest is upon us it is a good plan to close or build up substantially all old haunts of rats in buildings and walls. Rats are migratory animals, and they will always go to corn-ricks; but close attention to the destruction of them regularly prevents any serious damage from these mischievous pests. We find it answer well to allow 2d. to be paid for every rat caught about the farm. This is certainly money well spent, for we never find them increase upon us to a hurtful degree; and, remember, a hundred full-grown rats consume a large quantity of corn if left unmolested till the threshing.

Poultry.—Especial care must now be taken to save plenty of poults from early broods of chickens to afford a supply of eggs next winter, for unless this is done we cannot hope to have eggs then. Ducklings are nicely forward, and for once were ready before the first Green Peas. The supply of young pigeons is plentiful, and they are much liked at this season of the year, when there is very little in the way of game to be had.

PRESERVING BUTTER.

Will you kindly favour me with receipt for preserving butter for use in the winter? An answer through the Journal will oblige—J. G.

[Butter potted now for winter use must be made with great care; the buttermilk thoroughly extracted; 3 lbs. of salt added to each 70 lbs. of butter; each pot or jar filled at once, not gradually, the butter at top covered with salt, and a bladder or parchment tied closely over the top. Use glazed jars, and see that they are clean.]

OUR LETTER BOX.

Meadow Plant (J. W. L.).—The "stuff" with which you say your field is smothered is Black Medick or Nonsuch (*Medicago lupulina*). It is a valuable fodder plant, and instead of wanting to "get rid" of it you should be glad to see it among the grasses. We, too, have it in our Sussex pastures in remarkable abundance this year, and regard it as contributing materially to the high quality of our meadow hay. Analyses show that as hay it is richer than most other fodder plants both in albuminoids and carbo-hydrates.

Charlock (F. S. E.).—There is no other method of extirpating the weeds than by sedulously uprooting them, and the smaller they are the more quickly the work can be done. Not one should be allowed to flower.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet

DATE.	9 A.M.				IN THE DAY.				Rain	
	Baromet. ter at 32 1/2 and Sea Level	Hygromete- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		
		Dry.	Wet.			Max.	Min.	In sun.		On grass.
1885. June.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
Sunday 14	30.108	70.0	60.2	N.E.	59.5	79.1	50.1	111.9	41.6	—
Monday 15	30.104	57.4	54.2	N.	60.4	71.4	51.8	110.5	48.6	—
Tuesday 16	30.072	60.8	53.7	E.	60.7	67.7	50.7	112.6	47.0	—
Wednesday .. 17	29.862	54.8	52.4	E.	60.8	64.0	51.8	94.5	51.6	—
Thursday 18	29.990	59.4	53.4	S.	58.7	73.2	42.8	123.7	38.6	0.033
Friday 19	29.837	60.7	57.9	W.	59.4	69.3	53.3	102.7	49.6	0.069
Saturday 20	29.541	58.9	51.8	S.W.	59.2	64.6	54.3	122.2	54.6	0.050
	29.931	60.3	54.8		59.8	69.9	50.7	109.7	47.8	0.295

REMARKS.

14th.—Generally fine and bright.
15th.—Overcast early, cloudy morning, bright afternoon.
16th.—Fine morning, cloudy at times, bright afternoon, cloudy evening.
17th.—Heavy rain early; cloudy morning; fair afternoon.
18th.—Fine and bright.
19th.—Rain early; cloudy morning; heavy rain in afternoon.
20th.—Westerly gale, with sunshine and showers.
A variable week, some days colder than those of April, but on the whole a week of nearly the average temperature and rainfall.—G. J. SYMONS.

